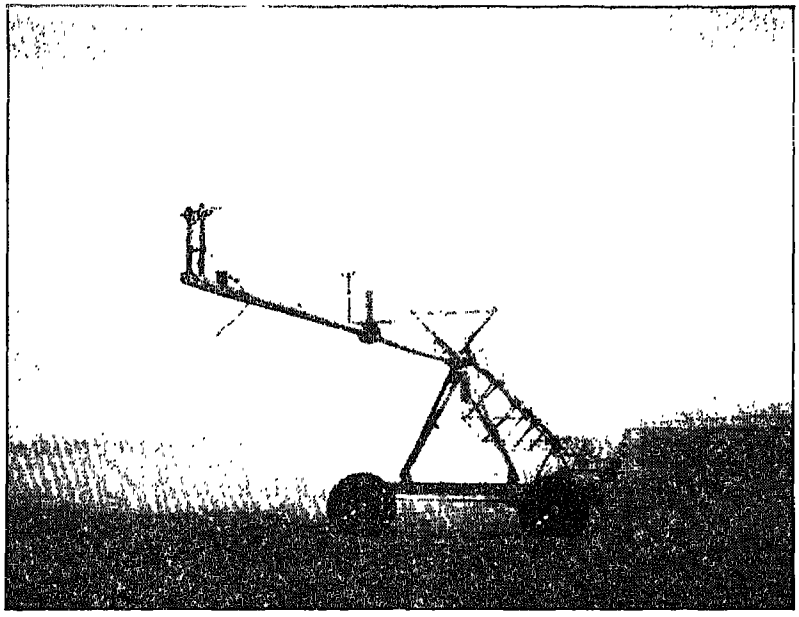
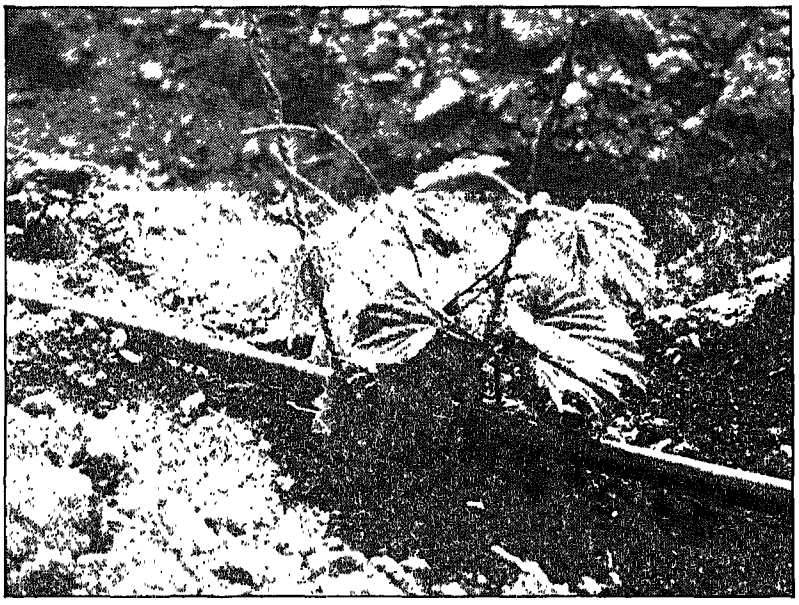






State Of Washing Irrigation Guide

Prepared by United States Department of Agriculture

Soil Conservation Service

In Cooperation with Washington State Cooperative Extension Service

PREFACE

This Irrigation Guide is a revision of previous SCS guides issued in the 70's and supersedes them. It was prepared from current available data relative to soils, topography, climate, crops, cultural practices and farming conditions in the state. It was prepared as a tool to assist all who work in irrigation in the preparation of technically sound irrigations system plans, establishing conservation irrigation methods on irrigated lands, and to assist in development of farm irrigation operation plans which will enhance good irrigation water management.

It was prepared as a joint effort with the Washington State Office of the USDA, Soil Conservation Service and the Washington State Cooperative Extension Service. Major contributions were made by the WSU Agricultural Engineering Department, the SCS of Oregon and California, USBR (Columbia Basin Office) and USDA, Agricultural Research Service (ARS).

It is prepared in loose-leaf form so that applicable revisions or additions can be made as needed.

The soils and crops shown are those that have been found to represent most of the conditions on the land irrigated at this time. As conditions change or more data becomes available, additions and refinements will be made.

Any errors or recommended changes should be brought to the attention of the State Conservation Engineer, Soil Conservation Service, Room 360, W. 920 Riverside, Spokane, Washington 99201-1080.

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PART WA680 - INTRODUCTION

SUBPART A - GENERAL

WA680.1 Purpose and objectives of Washington irrigation guide.

(a) This guide is for use in the entire State of Washington. The material was developed for use in planning and designing irrigation systems and for use in irrigation water management. The basic data used will ensure that the irrigation system will be capable of supplying the amounts of water needed by plants for optimum production during the growing season, including the peak consumptive use period. Peak use usually occurs during the hottest period when plants are making their maximum growth. The consumptive use data and irrigation requirements were based on WSU Research Bulletin XB0925 (1982) by L. G. James, et. al. as modified for monthly use values by Thomas Ley, Extension Irrigation Engineer.

(b) Some basic data for economic evaluation is included. However, it must be kept in mind that the economics of irrigation are usually an individual field or farm determination, in which various other factors may enter.

(c) Many principles of conservation irrigation are basic for other aspects of planning, such as drainage and erosion control. This guide should form a sound basis for collecting and evaluating needed additional information. Environmental aspects must be considered and as new material is developed, it will be included in this guide.

(1) Soils. Soils information is included in Part WA681 of this guide. Columns for furrow and sprinkler intake families are included with values from field tests or generated by grouping common soil parameters. As additional information on other soils is obtained from furrow and sprinkler trials, the values will be updated. Special limitations based on drainage or saline-alkaline conditions may have to be made based on onsite investigations by a soil scientist.

(2) Crops. Part WA682 of this guide contains information on the commonly irrigated crops. Considerations of management, critical irrigation periods, moisture-stress periods, and other special irrigation considerations are included for each of these crops.

WA680.1(c)(3)

(3) Water Requirements. Part WA683 of this guide contains information on water requirements. Due to the wide variations of growing seasons and climatic conditions, Figure 683.1 was prepared to identify the location of the representative consumptive use values.

(4) Irrigation system adaptation. Including other possible factors that may enter in, irrigation system adaptation is largely a function of the crop, soil, slope, and climatic zone. Part WA684 of this guide offers guidelines which may be used in determining the most feasible method or methods of irrigation for a given set of circumstances.

(5) Irrigation methods and design. Included in Part WA685 of this guide is criteria for design and implementation of the more commonly-used methods of irrigation in Washington.

(6) Farm distribution systems. Part WA686 of this guide discusses the various components of farm distribution systems.

(7) Irrigation water management. Irrigation water management should be practiced with each crop, each growing season, and each irrigation. New techniques of scheduling and automation are available whereby field data can be collected and an analysis of needs, time for irrigation, etc., can be returned to the farmer in a day or two. The Bureau of Reclamation's Irrigation Management Service (IMS) is such a method. Also, private companies offer this service in some areas. The concept of irrigation water management, included in Part WA687 of this guide, involves the following premises:

(i) The quantity of water used for each irrigation is determined by the available water-holding capacity of the soil or crop needs.

(ii) The water is applied at such a rate and in such a manner that crops can use it efficiently and within a rate that the soil can absorb the applied amount.

(iii) The timing of irrigation is such as to replace depleted moisture used by the crop since the previous irrigation..

(iv) The adjustment of stream sizes (application rates) and timing results in a minimum of water loss.

(8) Conservation irrigation planning. Part WA688 of this guide contains a format and procedure which can be used in planning irrigation systems and in evaluating irrigation water management.

(9) Energy use. Part WA689 of this guide reviews energy facts, costs and examples of irrigation systems comparisons in relation to energy requirements.

(10) Economic evaluation. Part WA690 of this guide contains criteria which can be used in making pumping cost studies and other economic factors which may be used in planning and design.

(11) Water supply forecasts. Part WA691 of this guide discusses the relationships of water supply to precipitation by rain or snow.

(12) Special-use table. Part WA692 of this guide contains special-use tables which may relate to other parts of the guide.

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PART WA681 - SOILS

SUBPART A - GENERAL

WA681.10 Introduction

(a) All major irrigated soils in the state are listed by series and USDA surface texture.

(b) Potential rooting limitations due to a high water table or a possible salinity problem are identified.

(c) Irrigation management groups were assigned to identify concerns and treatments in regard to soil intake rates and erosion problems.

(d) The soil depth (feet) to a restrictive layer or five feet is indicated as well as the available water storage capacity (inch/inch) by foot increments of depth. The water storage capacity represents the moisture available between field capacity and wilting point. Where noted with an (*) the data has been confirmed by lab tests, otherwise it is averaged from the SCS-SOILS-5

(e) Where data was available, the furrow intake family (I'f) and the maximum sprinkler intake rate in inches per hour (iph) are indicated without parenthesis ( ).

(f) The relative erosion ratings ('K'), and the allowable erosion rate (T) are indicated on the SCS-SOILS-5. A Critical Erosion Index (CEI) is a measure of the soils sensitivity to erosion.

(g) The soils data presented here does not replace information on the SCS-SOILS-5. The data is presented to provide a planning tool.

(h) Soils data is listed in Appendix A.

SUBPART B - SOIL IRRIGATION PARAMETERS

WA681.20 Irrigation limits.

(a) Properly designed irrigation systems take into account limiting parameters within the soil profile.

(1) High water tables during the growing season affect the effective rooting depth of a plant as well as the usable soil water storage to be replaced by irrigation. Where (W) is indicated in the limits column, it is an indicator that this soil has a seasonal water table between 2.5 feet and the soil surface.

(2) Salinity problems in a soil profile are indicated by mmohs rating on the SOILS-5. The degree of severity depends on the crop, irrigation water quality, and recorded level. Where (S) is indicated in the limits column, is an indicator that a mmoh reading of greater than zero was recorded for this soil on the SOILS-5.

WA681.21 Irrigation management group.

(a) Soils in Washington have been grouped into 32 management groups based on various soil parameters. These include the soils tolerance to sustain any degree of soil loss (CEI), its ability to withstand erosion (K), its ability to intake external water (intake rates) and if surface salinity is a problem. The management group explains the problems that could be expected under irrigation and methods to overcome some of the limitations. The narrative for each group is found beginning on page WA681-7.

WA681.22 Available water storage capacity.

(a) The amount of water stored in the soil for plant use is dependent upon the soil texture and depth and can be influenced significantly by changes in texture as well as compacted layers. As water is added to dry soil it is distributed through the soil pores or void space where it is held by adhesive and cohesive forces. It displaces air in the pore spaces and eventually fills the majority of them. The water in the larger pores moves downward as free water and the pores are again filled with air. The amount of water retained by the soil particles after fine drainage has occurred, is called the field capacity of the soil. For fine-textured (silt and clays) soils the pore spaces are very small compared to a coarse-grained soil like sand.

(b) Energy must be expended by plants to remove water from the soil. The force (suction) with which the water is held depends upon the amount in the soil--the smaller the amount, the greater the suction. When the moisture content decreases to a point that the plant cannot exert sufficient force to extract the moisture remaining in the soil, the plant will wilt. This moisture content is called the wilting point. Generally, sandy soils drain almost completely at low suction, whereas fine-textured clays and silts still hold a considerable amount of moisture at such high suction that plants growing in the soil wilt.

WA681.22(c)

(c) Available water - the difference between field capacity and wilting point - is a generalized term. As a plant exerts more suction to extract needed moisture, production decreases. Moisture levels are generally maintained at a percentage of available moisture to optimize crop production during the growth cycle (Table WA682.30.2). The tension required to hold water in a homogeneous salt-free soil is generally as follows:

(1) For loamy and clayey soils (i.e., sandy loams to clays); the difference between the values for one-third and fifteen bar tension.

(2) For sandy soils (i.e., sands to loamy sands); the difference between the one-tenth and fifteen bar tension.

(d) Soil salts (salinity) decrease the amount of soil water that is available for plant use. The available water capacity for soils listed in the guide do not consider the effects of salinity, but this must be considered in design and management of irrigation systems where saline soils or water exists.

(e) Soil samples were collected by SCS, USBR, and WSU soil scientists and engineers during the early 60's on common irrigated soils. Various tests were run to determine available the water capacity and percent of available moisture. Tests included lab soil-water tension tests as well as field free drainage and gravimetric tests. Soils evaluated have been included in this guide and are identified by an asterik (*). These values for AWC will differ from those on the SCS-SOILS-5.

(f) Available water capacity is influenced by bulk density. In field bulk density measurements will give an indication as to whether actual AWC is higher or lower than the value shown on the SCS-SOILS-5. Generally, the higher the bulk density the lower the AWC and visa versa.

(g) The water holding capacities indicated are primarily from lab tests. If the soil is overlying sand or gravels, actual capacity could be greater. The magnitude can be significant. Research has shown a soil underlain by sand can have 13% more available water, while a fsl underlain by coarse material having 60% more available water. 1/

WA681.23 Irrigation design values - Furrow (I'f) and Sprinkler (iph).

(a) These values represent the intake family for furrow and corrugation irrigation as well as the maximum sprinkler application rate.

(1) The furrow and corrugation family was developed using established SCS procedures. The value indicated should be considered an average condition. This value can vary significantly during an irrigation season with higher values expected in early season or after cultivations.

(2) Sprinkler intake rates were developed by actual field tests according to SCS procedures. The values assigned are the maximum expected value during the growing season.

1/ Conservation Research Report No. 13 by ARS and WSU, May 1969.

(b) Computer generated values ( ) were developed by grouping common intake parameters and assigning the value of tested soils in the group to the rest of the soils. The grouping parameters that provided the best correlation were the whc in the first foot, the 'K' value, the surface permeability, surface salinity and a test for permeability restrictions in the first two feet.

(c) Several factors can influence the intake and sprinkler design rates shown in the following tables.

(1) Good soil tilth increases the rates.

(2) Excess tillage and resulting compaction decreases the rates.

(3) Dry soils have a higher rate than wet soils.

(4) The degree and type of cover has a marked effect on the rates, especially for sprinkler.

(5) Breakdown and sealing of the soil surface results in reduced rates.

(6) Cracking soils have rapid intake rates for a short period of time before swelling and sealing.

(7) Tillage and subsoiling increases the soil intake rate for a short period of time until the soil settles.

(8) Proper crop rotations resulting in gains in organic matter in the soil will improve intake rates.

(9) Drainage and leaching of saline soils will generally raise their intake rate, however, if soil structure is poor, the rates will decrease.

(10) Changes in soil texture through a profile can impact the vertical rate of movement and retard the overall intake rate.

WA681.24 Relative erosion rating.

(a) The soil erodibility factor (K) used in the USLE is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff. It is a value determined experimentally for selected benchmark soils. Based on a knowledge of the behavior of soil properties and their interactions, the values were synthesized and values assigned to other kinds of soil.

(b) A single K value may be assigned to the dominant textural phase of a soil series if the erosion potential is about the same for all horizons and textural phases of that series. Where horizons or textural phases of a series differ greatly in erosion potential, by two or more K value classes, more than one K value is assigned to the named kind of soil.

(c) Soil scientists, working closely with other specialists who have a knowledge of soils and their behavior, assigned one of these K value classes to each kind of soil.

WA681.24(d)(1)

(d) In developing K values for soils, all applicable data was used. In addition, the following soil properties that have been found to affect soil erodibility were considered.

(1) Soil texture, especially percent of silt plus very find sand.

(2) Percent of sand greater than 0.10 mm.

(3) Soil organic matter content.

(4) Soil structure (type, grade).

(5) Soil permeability.

(6) Clay mineralogy.

(7) Coarse fragments in soil layer being evaluated.

(e) Rainfall intensity, distribution, and amount; length and steepness of slope; vegetative cover; and erosion control practices all influence soil erodibility, but these are included in other variables in the USLE. Irrigation erosion models are presently under development that when used in conjunction with USLE during the non irrigation season will evaluate total field soil movement.

WA681.25 Soil loss tolerance.

(a) The soil loss tolerance (T) is the rate of soil erosion that can be sustained in an average year without detrimental effects to soil productivity.

WA681.26 Critical Erosion Index (CEI)

(a) The Critical Erosion Index is a relationship of the soil erosion rating (K) to the soil loss tolerance (T). The relationship is used to indicate a soil's sensitivity to erosion by taking into account its ability to erode compared to its soil loss tolerance. This relationship allows for comparison of shallow soils (low soil loss tolerance) and moderate erodibility values with deep soils (high soil loss tolerance) and high erodibility values to determine the impact of soil loss on sustained production.

(b) The CEI is a further aid in determining maximum permissible irrigation slopes and the slopes influence on various series. For surface irrigated soils the product of CEI and slope (%) is recommended not to exceed 12. For high rate sprinkler systems such as center pivots or linear moves the product of CEI and slope (%) is recommended not to exceed 50. For alfalfa the value would be double and in pasture the value would be tripled. It is felt that other types of sprinkler systems can be adequately matched to the soil intake and no limitation is made. When these values are exceeded it is an indication that special or intense, agronomic, cultural, and mechanical treatments are needed.

WA681.30 Irrigation management groups defined.

(a) The following narrative on soil groups identifies limits and hazards that could be encountered when irrigating a soil in one of the groups. The irrigation management groups are found in Part 681.41.

(Group 1) This group of soils has a High Critical Erosion Index matched with a fast soil intake and some salts. With their high intake rates and low tolerance for erosion, they should not be considered for surface irrigation.

Erosion from all forms of sprinkler irrigation should not present a problem as long as the application rate is less than their high intake. If the rate is in excess, rapid degradation of the soil resource can be expected.

Crop selections may be limited on these soils due to surface salinity.

(Group 2) This group of soils has a High Critical Erosion Index matched with a fast soil intake. With their high intake rates and low tolerance for erosion, they should not be considered for surface irrigation.

Erosion from all forms of sprinkler irrigation should not present a problem as long as the application rate is less than their high intake. If the rate is in excess, rapid degradation of the soil resource can be expected.

(Group 3) This group of soils has a High Critical Erosion Index matched with a moderately fast soil intake and some salts. Due to their intake rate, they are generally not recommended for surface irrigation. If practiced, the run lengths should be less than 500 feet and slopes should be restricted to less than 1%. Stream sizes should be limited to the soil intake rate and stream sizes needed for the run length. Excessive stream sizes will produce erosion in excess of the soils tolerance level.

Most sprinkler application systems are adapted to these soils due to their intake range. High rate application systems such as center pivots and linear moves will produce few problems on slopes up to 1%. Over 1%, problems may occur from concentrated flow erosion but may be handled by proper agronomic and cultural practices. Close attention is needed on high rate systems when proposed on slopes over 4% due to the soils high erosion index. Application of these systems on slopes over 6% are recommended only when matching the system application rate to the soil intake rate and the application of a strong agronomic and cultural program.

Crop selections may be restricted by the presence of surface salts.

(Group 4) This group of soils has a High Critical Erosion Index matched with a moderately fast soil intake. Due to their intake range, they are generally not recommended for surface irrigation. If practiced, the run lengths should be less than 500 feet and slopes should be restricted to less than 1%. Stream sizes should be limited to the intake and size needed for the run length. Excessive stream sizes will produce erosion in excess of the soils tolerance level.

Most sprinkler application systems are adapted to these soils due to their intake range. High rate application systems such as center pivots and linear moves will produce few problems on slopes up to 1%. Over 1%, problems may occur from concentrated flow erosion but may be handled by proper agronomic and cultural practices. Close attention is needed on high rate systems when proposed on slopes over 4% due to the soils high erosion sensitivity. Application of these systems on slopes over 6% are recommended only when matching the system application rate to the soil intake rate and the application of a strong agronomic and cultural program.

(Group 5) This group of soils has a High Critical Erosion Index with a moderately slow intake value and some salts. For surface irrigation systems, this intake value allows for use of smaller stream sizes over a given run length. Allowing for the application of surface irrigation within reason. Slopes on these soils should not exceed 1.5% and stream sizes should be sized to just meet the intake value. Surface irrigation can be tolerated on up to 4% slopes if hay and alfalfa are grown. However, special consideration should be made for the crop establishment year. Run lengths should range from 600 to 1320 feet dependent upon the slope and concurrently have shorter set times on the flatter slope and longer on the steeper. Streams sizes should generally be kept to less than 5 gpm and be sized to the smallest size needed to satisfy application.

Care is needed in designing sprinkler systems on these soils. The sprinkler rate needs to be less than the intake rate or a rapid degradation of the soil resource can be expected. High rate systems such as center pivots and linear moves can be expected to have a runoff potential on slopes over 1% Special attention is needed to agronomic and cultural details on systems up to 5% slopes. Application of high rate systems on slopes over 5% are generally not recommended.

Surface salts may restrict crop selection on these soils. A proper leaching program on these soils will result in a soil with the behavioral characteristics of a group 4 soil.

(Group 6) This group of soils has a High Critical Erosion Index with a moderately slow intake value. For surface irrigation systems, this lower intake value allows for use of smaller stream sizes over a given run length. Allowing for the application of surface irrigation within reason. Slopes on these soils should not exceed 1.5% and stream sizes should be sized to just meet the intake value. Surface irrigation can be tolerated on up to 4% slopes if hay and alfalfa are grown. However, special consideration should be made for the crop establishment year. Run lengths should range from 600 to 1320 feet dependent upon the slope and concurrently have shorter set times on the flatter slope and longer on the steeper. Streams sizes should generally be kept to less than 5 gpm and be sized to the smallest size needed to satisfy application.

Care is needed in designing sprinkler systems on these soils. The sprinkler rate needs to be less than the intake rate or a rapid degradation of the soil resource can be expected. High rate systems such as center pivots and linear moves can be expected to have a runoff potential on slopes over 1% Special attention is needed to agronomic and cultural details on systems up to 5% slopes. Application of high rate systems on slopes over 5% are generally not recommended.

(Group 7) This group of soils has a High Critical Erosion Index with slow intake values and some salts. They are classified as one of the most critical irrigated soils in Washington state and special attention is needed if they are to be irrigated. Due to their sensitivity to erosion and degradation tolerance, stream sizes and application rates must be closely matched to their intake rates. Surface irrigation is not recommended on slopes over two percent.

Permanent cover crops are recommended under all forms of irrigation.

Sprinkler systems should be limited to low application systems such as solid set. High rate systems such as center pivots and linear moves are not recommended on these soils.

All forms of irrigation require emphasis to agronomic and cultural detail. Surface salts may present limitations for crop selection and adaptation. With a proper leaching program, these soils would be expected to behave as group 6 soils.

(Group 8) This group of soils has a High Critical Erosion Index with slow intake values. They are classified as the most critical irrigated soils in Washington state and special attention is needed if they are to be irrigated. Due to their sensitivity to erosion and degradation tolerance, stream sizes and application rates must be closely matched to their intake rates. Surface irrigation is not recommended on slopes over two percent.

Permanent cover crops are recommended under all forms of irrigation.

Sprinkler systems should be limited to low application systems such as solid set. High rate systems such as center pivots and linear moves are not recommended on these soils.

All forms of irrigation require detail to agronomic and cultural emphasis.

(Group 9) This group of soils has a Moderately High Critical Erosion Index matched with a fast soil intake and some salts. With their fast intake rates and low tolerance for erosion, they should not be considered for surface irrigation.

Erosion from all forms of sprinkler irrigation should not present a problem as long as the application rate is less than their fast intake. If the rate is in excess, rapid degradation of the soil resource can be expected.

Crop selection may be limited on these soils due to surface salinity.

WA681.30(a)(10)

(Group 10) This group of soils has a Moderately High Critical Erosion Index matched with a fast soil intake. With their fast intake rates and low tolerance for erosion, they should not be considered for surface irrigation.

Erosion from all forms of sprinkler irrigation should not present a problem as long as the application rate is less than their fast intake. If the rate is in excess, rapid degradation of the soil resource can be expected.

(Group 11) This group of soils has a Moderately High Critical Erosion Index matched with a moderately fast soil intake and some salts. Due to their intake range, they are generally not recommended for surface irrigation. If practiced, the run lengths should be less than 600 feet and slopes should be restricted to less than 2%. Stream sizes should be limited to the soil intake rate and stream size needed for the run length. Excessive stream sizes will produce erosion in excess of the soils tolerance level.

Most sprinkler application systems are adapted to these soils due to their intake range. High rate application systems such as center pivots and linear moves will produce few problems on slopes up to 1%. Over 1% problems may occur from concentrated flow erosion but may be handled by proper agronomic and cultural practices. Close attention is needed on high rate systems when installed on slopes over 5% due to the soils high erosion sensitivity. Application of these systems on slopes over 8% are recommended only with matching the system application rate to the soil intake rate and the application of strong agronomic and cultural program.

Crop selections may be restricted by the presents of surface salts.

(Group 12) This group of soils has a Moderately High Critical Erosion Index matched with a moderately fast soil intake. Due to their intake range, they are generally not recommended for surface irrigation. If practiced, the run lengths should be less than 600 feet and slopes should be restricted to less than 2%. Stream sizes should be limited to the soil intake rate and stream size needed for the run length. Excessive stream sizes will produce erosion in excess of the soils tolerance level.

Most sprinkler application systems are adapted to these soils due to their intake range. High rate application systems such as center pivots and linear moves will produce few problems on slopes up to 1%. Over 1% problems may occur from concentrated flow erosion but may be handled by proper agronomic and cultural practices. Close attention is needed on high rate systems when proposed on slopes over 5% due to the soils high erosion sensitivity. Application of these systems on slopes over 8% are recommended only with matching the system application rate to the soil intake rate and the application of strong agronomic and cultural program.

(Group 13) This group of soils has a Moderately High Critical Erosion Index with a moderately slow intake value and some salts. For surface irrigation systems, this soils low intake value allows for use of smaller stream sizes over a given run length. Allowing for the application of surface irrigation within reason. These soils should not exceed 2% slopes for surface irrigation and stream sizes should be sized to just meet the intake value. unless in pasture or alfalfa up to 4% slopes. However, special consideration should be made for the crop establishment year. Run lengths should range from 600 to 1320 feet dependent upon the slope and concurrently have shorter set times on the flatter slope and longer on the steeper. Streams sizes should generally be kept to less than 5 gpm and be sized to the smallest size needed to satisfy application.

Care is needed in designing sprinkler systems on these soils. The sprinkler rate needs to be less than the intake rate or a rapid degradation of the soil resource can be expected. High rate systems such as center pivots and linear moves can be expected to have a runoff potential on slopes over 1%. Special attention is needed to agronomic and cultural details on systems up to 8% slopes. Application of high rate systems on slopes over 8% are generally not recommended.

Surface salts may restrict crop selection on these soils. A proper leaching program on these soils will result in a soil with the behavioral characteristics of a group 12 soil.

(Group 14) This group of soils has a Moderately High Critical Erosion Index with a moderately slow intake value. For surface irrigation systems, this soils low intake value allows for use of smaller stream sizes over a given run length. Allowing for the application of surface irrigation within reason. These soils should not exceed 2% slopes for surface irrigation and stream sizes should be sized to just meet the intake value unless in pasture and alfalfa up to 4% slopes. However, special consideration should be made for the crop establishment year. Run lengths should range from 600 to 1320 feet dependent upon the slope and concurrently have shorter set times on the flatter slope and longer on the steeper. Streams sizes should generally be kept to less than 5 gpm and be sized to the smallest size needed to satisfy application.

Care is needed in designing sprinkler systems on these soils. The sprinkler rate needs to be less than the intake rate or a rapid degradation of the soil resource can be expected. High rate systems such as center pivots and linear moves can be expected to have a runoff potential on slopes over 1%. Special attention is needed to agronomic and cultural details on systems up to 8% slopes. Application of high rate systems on slopes over 8% are generally not recommended unless in permanent cover.

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(Group 15) This group of soils has a Moderately High Critical Erosion Index with slow intake values and some salts. They are classified as critical irrigated soils in Washington state and special attention is needed if they are to be irrigated. Due to their moderate sensitivity of erosion and degradation tolerance, stream sizes and application rates must be closely matched to their intake rates. Surface irrigation is not recommended on slopes over 3%. Permanent cover crops are recommended for all surface irrigation on slopes over 1-1/2%.

Permanent cover crops are recommended on sprinkler irrigated slopes over 3%. Sprinkler systems should be limited to low application systems such as solid set. High rate systems such as center pivots and linear moves are not recommended on these soils.

All forms of irrigation require specific detail to agronomic and cultural details. Surface salts may present limitations for crop selection and adaptation. With a proper leaching program, these soils would be expected to behave as group 14 soils.

(Group 16) This group of soils has a Moderately High Critical Erosion Index with slow intake values. They are classified as critical irrigated soils in Washington state and special attention is needed if they are to be irrigated. Due to their moderate sensitivity of erosion and degradation tolerance, stream sizes and application rates must be closely matched to their intake rates. Surface irrigation is not recommended on slopes over 3%. Permanent cover crops are recommended for all surface irrigation on slopes over 1-1/2%.

Permanent cover crops are recommended on sprinkler irrigated slopes over 3%. Sprinkler systems should be limited to low application systems such as solid set. High rate systems such as center pivots and linear moves are not recommended on these soils.

All forms of irrigation require specific detail to agronomic and cultural details.

(Group 17) This group of soils had a Moderate Critical Erosion Index with faster soil intake rates and some salts. Due to their high intake rates, they are not recommended for surface irrigation.

Since these soils exhibit a low erodibility potential or will tolerate minor erosion, all forms of sprinkler irrigation are adaptable. Good design practice would insure design of application rates to meet the soil intake rates.

ns may be limited on these soils due to the presents of surface

(Group 18) This group of soils had a Moderate Critical Erosion Index with fast soil intake rates. Due to their high intake rates, they are not recommended for surface irrigation.

Since these soils exhibit a low erodibility potential or will tolerate minor erosion, all forms of sprinkler irrigation are adaptable. Good design practice would insure design of application rates to meet the soil intake rates.

(Group 19) This group of soils has a Moderate Critical Erosion Index with moderately fast intake rates and some salts. With their intake range, they are not generally recommended for surface irrigation. If practiced, run length should not exceed 800 feet or slopes over 3% (5% with permanent cover). To force the water through the run length, high losses to deep percolation can be expected, due to the stream size required.

All forms of sprinkler irrigation are adaptable to these soils. With proper agronomic and cultural practices on slopes over 5%, few problems are expected with high rate application systems such as center pivots and linear moves.

Crop selections may be restricted due to the presence of surface salts. A proper leaching program of these soils will likely results in behavior similar to group 18.

(Group 20) This group of soils has a Moderate Critical Erosion Index with moderately fast intake rates. With their intake range, they are not generally recommended for surface irrigation. If practiced, run length should not exceed 800 feet or slopes over 3% (5% with permanent cover). To force the water through the run length, high losses to deep percolation can be expected, due to the stream size required.

All forms of sprinkler irrigation are adaptable to these soils. With proper agronomic and cultural practices on slopes over 5%, few problems are expected with high rate application systems such as center pivots and linear moves.

(Group 21) This group of soils has a Moderate Critical Erosion Index with moderately slow intake rates and some salts. Surface irrigation is adapted on these soils up to 3% (8% with permanent cover). Run lengths are generally 1/4 mile or shorter. Stream sizes will generally be 6 gpm or less with sizes of 8 gpm and greater to be avoided.

Sprinkler systems should be designed to meet the intake rate of the soil. High rate systems such as center pivots and linear moves will exhibit a runoff potential on slopes over 1%. With special agronomic and cultural practices, the systems will operate adequately on slopes to 12%. Over slopes of 10% agronomic, cultural, and mechanical (pit or dam marker) treatments are all recommended. Surface salts may restrict crop selection on these soils. With proper leaching program, these soils will exhibit characteristics similar to group 20.

681.30(a)(22)

(Group 22) This group of soils has a Moderate Critical Erosion Index with moderately slow intake rates. Surface irrigation is adapted on these soils up to 3% (8% with permanent cover). Run lengths are generally 1/4 mile or shorter. Stream sizes will generally be 6 gpm or less with sizes of 8 gpm and greater to be avoided.

Sprinkler systems should be designed to meet the intake rate of the soil. High rate systems such as center pivots and linear moves will exhibit a runoff potential on slopes over 1%. With special agronomic and cultural practices, the systems will operate adequately on slopes to 12%. Over slopes of 10% agronomic, cultural, and mechanical (pit or dam marker) treatments are all recommended.

(Group 23) This group of soils has a Moderate Critical Erosion Index with slow intake rates and some salts. Surface irrigation is adapted on these soils up to 3% (5% with permanent cover). The slope limitation is due primarily to the small stream size that would be needed to meet the intake rate without excessive runoff on steeper slopes.

Sprinkler systems that are matched to the intake rate are acceptable. Sprinkler irrigation on slopes greater than 5% should consider permanent cover crop. High rate application systems such as center pivots or linear moves are not generally recommended on these soils. When applied on slopes greater than 1/2%, mechanical (pitters or dikers), agronomic, and cultural treatment should be used. High rate systems are not recommended for slopes over 5%.

Surface salts may restrict crop selections. A proper leaching program may return soil behavioral characteristics similar to group 22.

(Group 24) This group of soils has a Moderate Critical Erosion Index with slow intake rates. Surface irrigation is adapted on these soils up to 3% (5% with permanent cover). The slope limitation is due primarily to the small stream size that would be needed to meet the intake rate without excessive runoff on steeper slopes.

Sprinkler systems that are matched to the intake rate are acceptable. Sprinkler irrigation on slopes greater than 5% should consider permanent cover crop. High rate application systems such as center pivots or linear moves are not generally recommended on these soils. When applied on slopes greater than 1/2%, mechanical (pitters or dikers), agronomic, and cultural treatment should be used. High rate systems are not recommended for slopes over 5%.

(Group 25) This group of soils has a Low Critical Erosion Index with fast soil intake rates and some salts. Due to their high intake rates, they are not recommended for surface irrigation. Since these soils exhibit a low erodibility potential, all forms of sprinkler irrigation are adaptable. Good design practice would insure design of application rates to meet the soil intake rates. Crop selections may be limited in these soils due to the presents of surface salts.

(Group 26) This group of soils has a Low Critical Erosion Index with fast soil intake rates. Due to their high intake rates, they are not recommended for surface irrigation.

Since these soils exhibit a low erodibility potential, all forms of sprinkler irrigation are adaptable. Good design practice would insure design of application rates to meet the soil intake rates.

(Group 27) This group of soils has a Low Critical Erosion Index with moderately fast intake rates and some salts. With their high intake range, they are not generally recommended for surface irrigation. If practiced, run lengths should not exceed 800 feet or slopes over 4% (8% with permanent cover). To force the water through the run length, high losses to deep percolation can be expected due to the stream size required.

All forms of sprinkler irrigation are adaptable to these soils. With proper agronomic and cultural practices on slopes over 8%, few problems are expected with high rate application systems such as center pivots and linear moves.

Crop selections may be restricted due to the presents of surface salts. A proper leaching program for these soils will likely result in behavior similar to group 26.

(Group 28) This group of soils has a Low Critical Erosion Index with moderately fast intake rates. With their high intake range, they are not generally recommended for surface irrigation. If practiced, run lengths should not exceed 800 feet or slopes over 4% (8% with permanent cover). To force the water through the run length, high losses to deep percolation can be expected due to the stream size required.

All forms of sprinkler irrigation are adaptable to these soils. With proper agronomic and cultural practices on slopes over 8%, few problems are expected with high rate application systems such as center pivots and linear moves.

(Group 29) This group of soils has a Low Critical Erosion Index with moderately slow intake rates and some salts. Surface irrigation is adapted on these soils up to 4% (8% with permanent cover). Run lengths are generally 1/4 mile or shorter. Stream sizes will generally be 6 gpm or less with sizes of 10 gpm and greater to be avoided.

Sprinkler systems should be designed to meet the intake rate of the soil. High rate systems such as center pivots and linear moves will exhibit a runoff potential on slopes over 1%. With special agronomic and cultural practices, the systems will operate adequately on slopes of 12%. Over slopes of 10%, agronomic, cultural, and mechanical (pit or dam maker) treatments are all recommended.

Surface salts may restrict crop selection on these soils. With a proper leaching program these soils will exhibit characteristics similar to group 28.

WA681.30(a)(30)

(Group 30) This group of soils has a Low Critical Erosion Index with moderately slow intake rates. Surface irrigation is adapted on these soils up to 4% (8% with permanent cover). Run lengths are generally 1/4 mile or shorter. Stream sizes will generally be 6 gpm or less with sizes of 10 gpm and greater to be avoided.

Sprinkler systems should be designed to meet the intake rate of the soil. High rate systems such as center pivots and linear moves will exhibit a runoff potential on slopes over 1%. With special agronomic and cultural practices, the systems will operate adequately on slopes of 12%. Over slopes of 10%, agronomic, cultural, and mechanical (pit or dam maker) treatments are all recommended.

(Group 31) This group of soils has a Low Critical Erosion Index with slow intake rates and some salts. Surface irrigation is adapted on these soils up to 3% (5% with permanent cover). The slope limitation is due primarily to the small stream size that would be needed to meet the intake rate without excessive runoff on steeper slopes. Sprinkler systems that are matched to the intake rate are acceptable.

Sprinkler irrigation on slopes greater than 5% should consider permanent cover crop. High rate application systems such as center pivots or linear moves are not generally recommended on these soils. When applied on slopes greater than 1/2%, mechanical (pitters or dikers), agronomic and cultural treatment should be specified. High rate systems are not recommended for slopes over 5%.

Surface salts may restrict crop selections. A proper leaching program may return soil behavioral characteristics similar to group 30.

(Group 32) This group of soils has a Low Critical Erosion Index with slow intake rates. Surface irrigation is adapted on these soils up to 3% (5% with permanent cover). The slope limitation is due primarily to the small stream size that would be needed to meet the intake rate without excessive runoff on steeper slopes.

Sprinkler systems that are matched to the intake rate are acceptable. Sprinkler irrigation on slopes greater than 5% should consider permanent cover crop. High rate application systems such as center pivots or linear moves are not generally recommended on these soils. When applied on slopes greater than 1/2%, mechanical (pitters or dikers), agronomic and cultural treatment should be specified. High rate systems are not recommended for slopes over 5%.

WA681.40 Explanation of tables.

(a) Data contained in Appendix A - Irrigated Soils Tables, is as follows:

(1) Column (1) Soil Type - Lists the name of the soil series and phase criteria in alphabetical order.

(2) Column (2) Texture

(i) Soil texture(s) for soil depth indicated in column (2). Symbols used are those prescribed for use on Form SCS-SOILS-5. (National Soils Handbook, Part II, Table 407.1(a)(3)(iii).

(ii) Where more than one texture is used on a line, they are separated by commas (e.g., L, SIL, is loam and/or silt loam). If modifiers are used, they are attached to the texture by a hyphen (e.g., GR-SL is gravelly sandy loam).

(3) Column (3) Limits. Lists whether there is a seasonal water table within 2.5 feet of the surface (W) or if there is a potential salinity problem in the profile (S). Where 'W, S' is indicated, the soil has a seasonal high water table within 2.5 feet of the surface and a salinity potential also exists.

(4) Column (4) Management Group. Identifies the irrigation management group assigned to this particular series and texture.

(5) Column (5) Depth. Lists the range in depth to a maximum of 5.0 feet or a restrictive layer. Does not account for a water table that may exist (see Column 2).

(6) Column (6) Increment. Lists the range in depth, in foot increments.

(7) Column (7) AWC. Shows the available water-storage capacity in inches per inch of depth for each soil horizon listed in column (5).

(8) Column (8) Furrow Intake Family (I'f). Lists the estimated furrow intake family(s) for the soil(s) listed in Column (1). (To be used in design of furrow and corrugation irrigation systems.)

(9) Column (9) Maximum Sprinkler Application Rate (iph). Each type of soils has unique intake characteristics, therefore,rates rather than group were established for each soil.

(10) Column (10) K Value (Erodibility Factor in USLE). Shows the approximate average K value for soils listed in Column (1).

(11) Column (11) T Value (Soil Loss Tolerance). Shows the assigned T value for soils listed in Column (1).

(12) Column (12) CEI Value (Critical Erosion Index). Shows a relationship value of 'K' and 'T' to account for the sensitivity of the soil to erosion.

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PART WA682 - CROPS

SUBPART A - GENERAL

WA682.10 Irrigation and crop production.

(a) The objective of irrigation is to supplement natural precipitation to meet the moisture requirements of the crop. When crop stress due to moisture shortage is prevented by proper and timely irrigation, other factors become inhibitors to production. These factors include poor soil structure and tilth, low fertility, poor stands, weeds, insects, and diseases. Much of the water applied through irrigation may be wasted unless sound farming practices are followed.

(b) Soil structure and tilth must be favorable for good aeration, good initial water intake, and good soil permeability. Soil tilth helps prevent runoff, water waste, and reduces water erosion. Tilth and structure can be maintained or improved by avoiding cultivation of wet fields, by the addition of manure, or by plowing under green manure crops, using grass and legumes in rotation, crop residue use, and minimum tillage. On irrigated pastures, cattle should be excluded after irrigation until the adequate soil dryout occurs.

(c) Low fertility, or an imbalance of nutrients, or improper pH is often the limiting factor. The well-fed plant uses water more efficiently than a plant that is starved or lacking in some nutrient elements. Total water use by a healthy, well-fed plant is greater than for a plant deprived of plant food, also the production per unit of water is much greater for the well-fed plant. Fertility problems should be corrected by the application of barnyard manure, commercial fertilizer, liming acid soils or an improved cropping system. Soil tests, observations, and field experiences help determine the type and amount of fertilizers to use.

(d) Adequate moisture, fertility and good soil physical conditions will not insure high production unless the irrigation farmer controls weeds and pests, uses high quality seed of adapted varieties, and uses timely operations. Weeds, insects, and diseases may be a greater problem on irrigated land than on dryland. Crops and varieties should be selected to fit the soil and irrigation system. Plant population should be increased in most cases to take advantage of water added by irrigation.

SUBPART B - CROP ADAPTATIONS

WA682.20 Irrigation methods.

(a) The crops that are grown and their cultural requirements aid in determining the type of irrigation used. Crops are placed in four broad categories:

(1) Row or bedded crops.

(2) Close-growing crops; sown, drilled, or sodded.

(3) High water tolerance crops; ones which can stand flooding for 12 hours or more.

(4) Orchards, vineyards and hops.

(b) An irrigation system may be grouped into four broad classifications:

(1) Surface: The application of water to a soil surface by either completely covering a soil surface with water or partially applying water over a confined area. This method of irrigation is adaptable to all categories above with complete surface flooding generally being restricted to categories 2 and 3.

Complete flooding consists of flooding from field ditches, flooding strips between border dikes, and flooding in basins or checks. The entire land surface is covered with water by this method.

In the partial-flooding method, water is applied down a furrow or corrugation by introducing a small stream of water into closely-spaced shallow earth channels which distributes water both laterally and downward from the direction of flow to moisten the plant root zone.

(2) Sprinkler (All Forms): Sprinkle irrigation systems may be associated with all categories above, limited only by crop height and type of equipment. Sprinkle irrigation system applies water to an area by an artifical rainfall method. A system of nozzles releases water in droplets over a given area. There are numerous types of systems varying from a single lateral with spray nozzles,solid sets, self-propelled and center- pivots. The crop variety or height of growth may dictate the type to be selected.

(3) Sub Irrigation: Water Table control systems may also be associated with all four categories. However, it is more closely-related to high water tolerance crops, although it has been used successfully on other crops when the soils are capable of having free drainage. Subsurface irrigation is the process of regulating a water table to supply the plant water needs. This may be accomplished by a system of drains installed to remove water or add water into the soil profile.

WA682.20(b)(4)

(4) Trickle (Drip): Similar to gravity irrigation in that water is applied to limited soil surface areas. Water is delivered to a point by a system of pipes and then released to the plant to moisten the root zone. May be associated with all categories but primarily applied to 1 and 4.

WA682.21 Soils.

(a) The soil is a storehouse of plant nutrients, a habitat for bacteria, an anchorage for plants, and a reservoir that holds the water needed for plant growth. The amount of water a soil can hold available for plant use is determined by its physical properties and determines the length of time a plant can survive without water being added. It also determines both the frequency of irrigation and the capacity of the irrigation system needed to insure continuous crop growth.

(b) Two important physical properties of soils are texture and structure. Soil texture refers to the relative proportion of the various size groups of mineral particles in a given soil. Soil structure refers to the manner in which the particles are arranged in groups or aggregates. Together, soil texture and soil structure help to determine air and available supply of water in the soil.

(c) Unlike texture, structure of the surface soil can be changed. Excellent structure develops in the surface layer of soils high in organic matter and on which perennial grass is growing. Cycles of wetting and drying or of freezing and thawing improve structure in the plow layer. On the other hand, cultivation of medium or fine textured soils when their moisture content is high, tends to destroy structure. Irrigation water containing large amounts of sodium causes very undesirable structure by dispersing the soil aggregates.

(d) There are numerous soil environmental factors which may limit the plants genetic capabilities for root development. Most important of these are soil density and pore size or configuration, soil moisture status, soil aeration, nutrient status, textural or structural stratification, water tables, soluble salts and soil-borne organisms that damage or destroy plant roots. When root development is restricted, it reduces the available water storage reservoir and greatly alters irrigation practices necessary for the desired crop production and water conservation. The predominate factor that influences a restriction in root development is from compaction. Severe compaction can result from improper timing of cultivations in relationship to soil moisture.

WA682.22 Climate.

(a) Climate exerts important influences on the selection of lands for irrigation. The character of the soil, drainage conditions, distribution of native vegetation and crop adaptation are related to climate. The physical environmental factors of degree days (growing season) and the timing of natural precipitation are just a couple that may determine what will or will not grow..

(b) A proper set of assumptions regarding crop adaptations and required management systems must be made. This selection affects water requirements, design of the distribution system, selection of the irrigation method drainage and leaching requirements in fact, controls the feasibility and justification of the system.

WA682.23 Slope.

The effect of slope on the suitability of land for irrigation is influenced by the crops grown, the duration and intensity of rainfall, erodibility of the soil, income potential, and the method of irrigation to be used. As slope increases, soil erosion potential increases. This potential varies with irrigation method, being particularly pronounced with gravity methods and somewhat subdued under sprinkle application methods. As slope increases, shifts in cropping patterns from row to close-growing crops are made. In general, row crops produce higher net incomes. Hence, a decline of income may result. Surface drainage problems frequently arise on lands lacking slope. However, this can usually be alleviated with proper water management, by land forming and installing surface drainage systems or a combination of these.

WA682.24 Cultural practices.

(a) Seedbed preparation, weed control, irrigation and harvest comprise the major cultural practices in irrigated crop production. The degree of intensity which each is carried out is related to the relative value of the crop being produced. For example, row crops require a more intensive program of weed control.

(b) Fertilization to promote optimum plant growth and crop yields may also be called a cultural practice.

SUBPART C - CRITICAL GROWTH PERIODS

WA682.30(a)

WA682.30 Critical growth periods.

(a) For optimum production and the most efficient use of water, plants must have ample moisture throughout the growing season. This is most important during critical periods of growth and development. Although plants indicate moisture stress by various symptoms, yields will usually be reduced by the time the plant shows stress. Time of irrigation should be determined by examination of the soil for moisture content, or by other methods for which basic data has been established. Symptoms of serious moisture stress, critical water requirement periods, and other irrigation considerations, are listed on the table below.

Crop	Moisture Stress	Critical Period	Other Considerations
Alfalfa (Hay)	Darkening color, then wilting.	Early spring & Immediately after cuttings.	Profile is generally depleted during cutting and drying cycle. Fall irrigation is desirable.
Alfalfa (Seed)	Darkening color, then wilting.	Spring to bloom stage.	After bloom allow up to 90% depletion between.
Corn	Curling of leaves by mid-morning.	Tasseling, silk stage until grain is fully formed.	Needs adequate moisture from germination to dent stage for maximum production.
Sorghum	Curling of leaves by mid-morning.	Boot, bloom & dough stages.	Yields are reduced if water is short during seed development.
Sugar Beets	Leaves wilting during heat of the day	Post thinning.	Excessive fall irrigation lowers sugar content.
Beans	Wilting.	Bloom and fruit set.	Yields are reduced if water is short at bloom or fruit set.
Small Grain	Dull green color, then firing of lower leaves.	Boot and bloom stage	Last irrigation at milk stage.

(MORE)

Table WA682.30.1 - Critical Growth Periods for Major Crops

WA682.30(a)

(Continued)

Crop	Moisture Stress	Critical Period	Other Considerations
Grapes	Leaf and shoot color dark grayish green. Sheet tips dry.	Any point during growing season.	Sensitive to stress at all growth periods, particularly during fruit filling.
Potatoes	Wilting during heat of the day.	Tuber formation to harvest.	Moisture stress during critical period may cause cracking of tubers.
Onions	Wilting	Bulb formation.	Keep wet during bulb formation, let soil dry near harvest.
Tomatoes	Wilting	After fruit set.	Wilt and leaf rolling can be caused by disease.
Cool Season Grass	Dull green color, then wilting.	Early spring, early fall.	For seed production critical period is boot to head formation.
Fruit Trees	Dulling of leaf color, and drooping of.	Any point during growing season.	Stone fruits are sensitive to moisture stress during last two weeks to harvest.

(END)

Table WA682.30.2 - Desired Percent of Soil Moisture Depletion prior to Next Irrigation.

Crop	Season	First Irrigation	Later Irrigation	
Potatoes	25	25	50	(at vine kill)
Sugar Beets	50	50	50	
Sweet Corn	40	60	40	
Field Corn	50	60	50	
Mint	40	40	40	
Beans	40	40	40	
Small Grains	60	60	40	(from boot stage through flowering)
Onions	25	40	25	
Alfalfa Hay	50	50	50	
Alfalfa Seed	65	35	90	
Grapes	40	35	50	(bloom to harvest)
Pasture	50	50	50	(fruit color change to harvest)

Check % available soil moisture at approximately one-third the depth of crop root zone (potatoes, 8 to 10 inches deep). (See Table WA682.50 for other crops.)

ɳ becomes available, plant moisture tension curves will be

(c) The desired depletion level not only varies during the growing season, but also varies dependent upon soil moisture storage and climatic influences. When considering potatoes, for example, the recommended moisture deficit in Othello would be 15 to 20% for a use rate of 11 inches in July, while in Olympia the allowable moisture deficit would be 35% for a use rate of 4.5 inches in August.

The values in Table WA6892.30.4 are presented to aid in establishing localized recommended deficit values by incorporating them into Table WA682.50.

The values in Table WA682.30.4 are projected for a fsl, sl soil. For coarse soils, such as ls and s, the values would be lowered 5 to 10%. For fine soils, such as cl and sil, the values would be raised 5 to 10%.

Table WA682.30.3 - Crop Groups by Critical Allowable Depletion

Group 1 - Alfalfa, corn (grain), cucumbers, hops, pasture, safflower, soybeans, sugarbeets

Group 2 - Corn (sweet), crucifers, onions (dry), tomatoes

Group 3 - Orchards, beans (dry and green), carrots, clover, grapes, mint, peas (dry and green), radishes, raspberries, sorghum, spring grain, strawberries, sunflowers, winter wheat, alfalfa (seed)

Group 4 - Onions (green), spinach, potatoes

Table WA682.30.4 - Recommended Soil Water Depletion (%) by Crop Group 1/

Crop Group	Monthly Cu					
	2	4	6	8	10	12
1	80	70	60	50	40	35
2	65	50	45	40	35	30
3	55	45	40	35	30	25
4	45	35	20	25	20	15

These values are used to localize the Guide by incorporation into Table WA682.50.

1/ Developed along the lines of Table 19 and 20 in FAO Irrigation and Drainage Paper 33.

SUBPART D - SALINITY TOLERANCE

WA682.40 Salinity tolerance.

(a) Generally speaking, all irrigation water contains soluble salts. These salts tend to accumulate in irrigated soils and are sometimes harmful to crop production. Water is used by the crop and evaporates from the soil surface, leaving behind salts, creating a high salt concentration. These conditions are particularly common where most of the moisture supply comes from irrigation. The problem will eventually become serious if irrigation or natural precipitation is not sufficient to leach the accumulating salts or if the soil is poorly drained.

(b) A growing crop has a basic demand for water to produce the optimum yield. This is called evapotranspiration (ET) and includes water evaporating from the soil (evaporation) and water used by the crop (transpiration). Potential ET for different crops and growth stages is primarily related to climate (day length, temperature, humidity, wind, and radiation) but actual ET may be limited by salinity and the amount of soil water available.

(c) Available soil water can be expressed in terms of soil water potential which is a measure of the force with which the water is held by the soil which is the force the plant must overcome to obtain the water. Salinity also has an effect on soil water availability, decreasing its availability to the crop in proportion to its salinity.

(d) If two identical soils are at the same degree of wetness, but one is salt-free and the other is salty, the crop will be able to extract and use more water from the salt-free soil than from the salty soil.

(e) If the salt content of the soil cannot be held or reduced to a point compatible with the crop, a more salt-tolerant crop should be grown.

(f) Salt molecules, in solution, split up to produce electrically-charged particles called ions. The ions can conduct an electrical current. The greater the concentration of ions in a solution, the greater the conductivity of the solution. Thus, the salinity of a soil can be determined by measuring the electrical conductivity in millimhos per centimeter. That is the usual term in which soil salinity is reported. Table WA682.40.1 provides general guidance to farmers who experience salinity problems. In addition, the table also shows electrical conductivity for the irrigation water related to yield decrease.

WA682.40(1)

Table WA682.40.1 - Crop tolerance table. Yield decrease to be expected for certain crops due to salinity of irrigation water when based upon the electrical conductivity of the soil extract (ECe).

CROP	0% ECe[1]/	10% ECe	25% ECe	50% ECe	Max. ECe[2]/
			FIELD CROPS		
Barley 4/	8.0	10	13	18	28
Sugarbeet 5/	7.0	8.7	11	15	24
Wheat 3/ 5/	6.0	7.4	9.5	13	20
Corn	1.7	2.5	3.8	5.9	10
Beans	1.0	1.5	2.3	3.6	6.5
			FRUIT CROPS		
Apple Pear	1.7	2.3	3.3	4.8	8
Walnut	1.7	2.3	3.3	4.8	8
Peach	1.7	2.2	2.9	4.1	6.5
Apricot	1.6	2.0	2.6	3.7	6
Grape	1.5	2.5	4.1	6.7	12
Plum	1.5	2.1	2.9	4.3	7
Blackberry	1.5	2.0	2.6	3.8	6
Boysenberry	1.5	2.0	2.6	3.8	6
Raspberry	1.0	1.4	2.1	3.2	5.5
Strawberry	1.0	1.3	1.8	2.5	4
			VEGETABLE CROPS		
Beets 5/	4.0	5.1	6.8	9.6	15
Broccoli	2.8	3.9	5.5	8.2	13.5
Tomato	2.5	3.5	5.0	7.6	12.5
Cucumber	2.5	3.3	4.4	6.3	10
Cantaloupe	2.2	3.6	5.7	9.1	16

(MORE)

CROP	0% ECe1/	10% ECe	25% ECe	50% ECe	Max. ECe2/
VEGETABLE CROPS (cont.)					
Spinach	2.0	3.3	5.3	8.6	15
Cabbage	1.8	2.8	4.4	7.0	12
Potato	1.7	2.5	3.8	5.9	10
Sweet corn	1.7	2.5	3.8	5.9	10
Onion	1.2	1.8	2.8	4.3	7.5
Carrot	1.0	1.7	2.8	4.6	8
Beans	1.0	1.5	2.3	3.6	6.5
FORAGE CROPS					
Tall wheat grass	7.5	9.9	13.3	19.4	31.5
Wheat grass (fairway)	7.5	9.0	11	15	22
Barley (hay) 3/	6.0	7.4	9.5	13.0	20
Perennial rye grass	5.6	6.9	8.9	12.2	19
Trefoil, birdsfoot 6/	5.0	6.0	7.5	10	15
Tall fescue	3.9	5.8	8.6	13.3	23
Crested Wheat grass	3.5	6.0	9.8	16	28.5
Vetch	3.0	3.9	5.3	7.6	12
Sudan grass	2.8	5.1	8.6	14.4	26
Wildrye, beardless	2.7	4.4	6.9	11.0	19.5
Trefoil, big	2.3	2.8	3.6	4.9	7.5
Alfalfa	2.0	3.4	5.4	8.8	15.5
Corn (forage)	1.8	3.2	5.2	8.6	15.5
Clover, berseem	1.5	3.2	5.9	10.3	19
Orchard grass	1.5	3.1	5.5	9.6	17.5

(MORE)

CROP	0% ECe1/	10% ECe	25% ECe	50% ECe	Max. ECe2/
		FORAGE CROPS (cont.)			
Meadow foxtail	1.5	2.5	4.1	6.7	12
Clover, alsike, ladino, red, strawberry	1.5	2.3	3.6	5.7	10

FOOTNOTES:

1/ ECe means electrical conductivity of the saturation extract of the soil reported in millimhos per centimeter at 25°C.

2/ Maximum ECe means the maximum electrical conductivity of the soil saturation extract that can develop due to the listed crop withdrawing soil water to meet its evapotranspiration demand. At this salinity, crop growth ceases (100% yield decrease) due to the osmotic effect and reduction in crop water availability to zero.

3/ Barley and wheat are less tolerant during germination and seedling stage. ECe should not exceed 4 or 4 mmhos/cm.

4/ Sensitive during germination. ECe should not exceed 3 mmhos/cm for garden beets and sugar beets.

5/ Tolerance data may not apply to new semi-dwarf varieties of wheat.

6/ Broad-leaf birdsfoot trefoil appears to be less tolerant than narrow-leaf.

Source: Data as reported by Maas and Hoffman (in press); Bernstein (1964), and University of California Committee of Consultants (1974), published FAO Irrigation and Drainage Paper No. 29.

SUBPART E - IRRIGATION RELATED MANAGEMENT FACTORS

WA682.50

WA682.50 Table WA682.50 - Crop management factors and adapted irrigation methods.

Adapted Crops	Effective Root Zone (80% feeder roots)	Management Allowed Deficiency 1/ General	Local	Row Spacing (Inches)	Graded & Level Borders	Graded & Level Furrow	Corrugation	Sprinkler	Trickle (drip)
Alfalfa Hay	5+	50		2/	x		x	x	
Alfalfa-Grass Hay	4	50		2/	x		x	x	
Alfalfa Seed	5+	65		36 2/	x		x	x	
Apples	5	50		180-240	x	x	x	x	x
Apricot	5	50		180-240	x	x	x	x	x
Asparagus	5+	50		2/	x	x	x	x	x
Bean (bush)	2	50		22		x		x	x
Bean (dry)	2	50		22		x		x	x
Bean (pole)	5	50		36		x		x	x
Beet (sugar)	2.5	50		22	x	x		x	
Beet (table)	1.5	50		24 2/		x		x	x
Berries	5	50						x	x
Broccoli	2	40		36		x		x	x
Brussel Sprout	2	40		36		x		x	x
Bulb, Spring	2	40		30-48		x		x	x
Bulb, Fall	2	40		30-48		x		x	x
Cabbage	2	40		36		x		x	x
Cantaloupe	4	40		72		x		x	x
Carrot	2	40		24 2/		x		x	x
Cauliflower	2	40		36		x		x	x
Celery	2	35		22 2/		x		x	x
Chard	3	40		24 2/		x		x	x
Cherry	5	50		180-240	x	x	x	x	x
Citrus	5	40		2/	x	x	x	x	x
Clover-Grass Hay	2	50		2/	x		x	x	
Clover, Ladino	2	40		2/	x		x	x	
Clover Seed	2	50		2/	x		x	x	
Corn (Field & Silage)	3	50		36		x		x	
Corn (Sweet)	2	40		36		x		x	
Cranberries	1	30		30-48				x	
Cucumbers	2	50		72-96		x		x	x
Flower Seed	2	50				x		x	
Grain (Spring & Fall)	3	50		2/	x		x	x	
Grapes	3	50		2/		x		x	x
Grass Seed	3	50		36 2/	x	x	x	x	
Hops	5	50		80-96		x		x	x
Lettuce	1.5	35		22 2/		x		x	x
Mint	2	35		24 2/		x		x	
Melons	5	40		72		x		x	x
Nursery Stock	2	50		2/				x	x
Nut Trees	5+	50		2/		x		x	x
Oats	2.5	50		22-36 2/	x	x		x	
Onion, Dry	2	50		22 2/		x		x	x
Onion, Green	2	35		22 2/		x		x	x
Parsnip	3	40		24 2/		x		x	x
Pasture/Turf	2.5	50		2/	x		x	x	
Peaches	5	50		180-240	x	x	x	x	x
Peas (all)	2	50		2/	x		x	x	x
Pears & Plums	5	50		180-240	x	x	x	x	x
Potatoes	2	25		36		x		x	
Pumpkin	4	50		72-96		x		x	x
Radish	1	40		22		x		x	x
Raspberries	4	50				x		x	x
Safflower	5	50		2/	x	x		x	
Sorghum	3	50		36	x	x		x	
Soybeans	2.5	50		22	x		x	x	x
Spinach	2	35		22		x		x	x
Squash	3	50		72-96		x		x	x
Strawberries	1.5	40		30-42		x			x
Sunflowers	5	50		2/	x	x		x	
Tomatoes	4	50		36		x		x	
Turnip	2.5	40		24 2/		x		x	x
Watermellon	3.5	40		72-96		x		x	x

1/ Management allowed deficiency (MAD) is the normal design level used to determine when to replenish depleted soil moisture. Table WA682.30.2 reflects the seasonal change in MAD for select crops.

2/ Varies locally based upon soil texture and implement width.

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PART WA683 - WATER REQUIREMENTS

SUBPART A - GENERAL

WA683.11(a)(1)

WA683.10 Net irrigation water requirement.

The net irrigation water requirement is defined as the water supplied by irrigation to satisfy evapotranspiration, leaching and miscellaneous water requirements that are not provided by water stored in the soil and precipitation that enters the soil. Precipitation that drains through a soil is not effective unless it reduces the leaching requirement. The irrigation requirement is defined as:

$$W_r = W_{et} + W_l + W_m - R_e - W_s$$

Where

W_r = Irrigation water requirement for the period considered.

W_{et} = Evapotranspiration, the quantity of water required for transpiration or building of plant tissue evaporation from the soil and interception of precipitation during a specific period of time.

W_l = Leaching requirement; the quantity of water required to remove soluble salts from the root zone by the downward passage of water.

W_m = Miscellaneous water requirements; the quantity of water used to aid in germination and emergence of small seeds, to prevent frost damage to crops and for plant cooling.

R_e = Effective rainfall.

W_s = The decrease in soil water that can be utilized during the period.

WA683.11 Consumptive use and methodology.

(a) General methodology

(1) Consumptive use of water or evapotranspiration is one of the important elements of the hydrological cycle from the time water falls upon the land as precipitation until it reaches the ocean or is returned to the atmosphere.

WA683.11(a)(2)

(2) Consumptive use data is essential for estimating water requirements for irrigation and is useful for estimating municipal and industrial water needs. From the results of research studies, formulas have been developed relating consumptive use and climatological data. The net irrigation water requirement can be determined by transposing observed consumptive use data from one area to other areas where few or no data except climatologic records are available, by the use of these formulas. Direct transfer of consumptive use data to an area with widely different climatic conditions is not valid.

(b) Method of computation.

(1) In areas for which few or no measurements of consumptive use are available, it is necessary to estimate consumptive use from climatological data. The predominate procedure for the Soil Conservation Service is the SCS Blaney-Criddle Modified method. Work done by WSU in 1982, developed another procedure based upon probability from FAO 24 Blaney-Criddle. Both procedures are for the primary purpose of estimating seasonal consumptive use.

(2) The basic assumption by procedures is that a consumptive use factor of pasture is modified by a seasonal growth coefficient for various crops. By merging of the two procedures, crop use data will be available for approximately 60 crops in Washington state.

(3) The methodology for determining water requirements is outlined in "Irrigation Water Requirements, SCS Technical Release No. 21, revised 1970" and in "Irrigation Requirements for Washington - Estimates and Methodology WSU Research Bulletin XB0925, 1982"

SUBPART B - IRRIGATION USE AREAS

WA683.20 Irrigation use areas.

Due to the wide variation of climatic conditions in the state, consumptive use values were developed for weather stations around the state. The selected stations are shown in Figure WA683.10, following this subpart.

LOCATION OF WASHINGTON WEATHER STATIONS
Figure WA683.1

WA683-5

SUBPART C - OTHER WATER REQUIREMENTS

WA683.32

'A683.30 Cooling.

Water, applied through a sprinkler system is an effective way to reduce he air temperature for crops adversely affected by high temperatures. The ntire field must be covered with a fine mist either continuously or by requent cycling of the application system. This practice can reduce field emperatures as much as 15 degrees (F) during periods of high temperature.

\683.31 Frost protection.

(a) Application of water, by a sprinkler system is an effective way to :otect crops from freezing. It also appears to be effective in preventing ırly blossoming in orchards.

(b) For frost protection, an entire field must be covered with a fine mist ' water during periods of freezing temperature. The system should be turned . before air temperature at plant level reaches 32 degrees. The plants come covered with ice; however, the freezing of water releases latent heat ich is absorbed by the plants, and this gives protection until the mperature drops too low. Protection is usually obtained for temperatures mewhat below 25 degrees. Damage will occur if the water is turned off fore the temperature has risen and the ice has melted from the plants. ost protection is more readily adapted to low-growing vegetable crops, but ed successfully in orchards.

For planning purposes, over tree frost protection requires proximately 75-100 gpm/acre. While under tree requires 35-50 gpm/acre. ecific design considerations are contained in Part WA685 L - Freeze otection.

(c) To prevent premature blossom set in orchards, a fine mist is sprayed :r the trees whenever the temperature rises above approximately 45°F. The ling effect of the water and evaporation will cause the trees to remain mant until the danger of damaging freeze periods is past.

83.32 Pre-irrigation.

Application of water is sometimes required to provide sufficient moisture; germinate seeds for annual crops and or new seeding, new plantings of hards, vineyards, etc.

WA683.33

WA683.33 Leaching.

Salts are added to the soil as irrigation water is applied. If no water leaches below the root zone, salts will continue to accumulate and will eventually reduce yields. The amount of water required to control salt and maintain root-zone soil salinity low enough to produce an acceptable yield of a specific crop is the leaching requirement. It depends upon the salt load of the applied water and the salt tolerance of the crop. Satisfying the leaching requirement is easier on light-textured soils and more difficult on heavy-textured soils.

WA683.34 Determining the leaching fraction.

(a) There are several methods of calculating the leaching requirement for a specific crop and a given water supply. The following method is recommended: 1/

Large Volume Application Surface & Some Sprinkler	Light Volume Application Near Daily Sprinkler & Drip
$LR = \frac{ECw}{5ECe-ECw}$	$LR = \frac{ECw}{2\ (Max\ Ece)}$

LR = Leaching requirement needed to control salts with ordinary surface irrigation methods.

ECw = Salinity of applied water

ECe = Soil salinity tolerated by the crop

(b) Table WA682.40.1 gives allowable soil salinity (ECe) values for selected crops and related yield reductions. Generally, yield reductions exceeding ten percent are not recommended.

(c) An irrigation water analysis and analysis of soil samples from each 1/4 of the root zone are needed to determine the leaching requirement. The arithmetic average of the soil ECe values for each 1/4 of the root zone should be used. The following example illustrates the calculation of leaching requirement.

Given: Crop = Alfalfa
ECw = 2.2 (lab tests)
ECe = 3.4 (Table WA682.30.1; ten percent yield reduction)
Max ECe = 15.5

Solution: (Large Volume) $LR = \frac{ECw}{5ECe-ECw} = \frac{2.2}{5(3.4) - 2.2} = \frac{2.2}{14.8} = 0.15$ or 15%

Solution: (Light Volume) $LR = \frac{ECw}{2(Max\ ECe)} = \frac{2.2}{2(15.5)} = 0.07$ or 7%

1/ Rhoades, U.S., Salinity Laboratory, Riverside, California, 1977.

CONNELL * 46.67 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	28.8	37.8	44.0	50.0	58.2	65.1	73.2	72.9	61.6	51.2	37.6	29.5	
TOTAL PRECIPITATION (IN)	1.22	.85	.79	.63	.79	.66	.24	.48	.41	.76	1.22	1.43	9.46
EFFECTIVE PRECIP (IN)	.00	.19	.52	.46	.65	.61	.24	.47	.33	.51	.23	.00	4.20

ALFALFA — BEG 4/30 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	00	.00	.00	5.48	7.26	10.06	8.39	5.22	1.72	.00	.00	38.16
AV. PAN FACTOR	.76	.76	.76	76	.76	.76	.76	76	.76	.76	.76	.76	

CLOVER — BEG 4/30 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.14	8.12	11.15	9.32	5.80	1.98	.00	.00	42.51
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	84	

PASTURE/TURF — BEG 4/30 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5 81	7.70	10.61	8.85	5.51	1.85	.00	.00	40.33
AV. PAN FACTOR	.80	.80	.80	.80	80	.80	.80	.80	.00	.80	.80	.80	

APPLES W/COVER — BEG 4/26 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.14	5.13	8.95	13.32	11.18	6.68	1.72	.00	.00	47.11
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER — BEG 3/29 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.56	4.79	8.12	12.23	10.25	6.09	1.46	.00	.00	44.51
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.68	.68	.36	.36	

CHERRY W/COVER — BEG 4/15 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.65	5.13	8.95	13.32	11.18	6.68	1.72	.00	.00	47.62
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.06	4.79	8.12	12.23	10.25	6.09	1.46	.00	.00	44.01
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.68	.68	.36	.36	

PEAR & PLUM W/COVER — BEG 4/18 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.51	4.79	8.12	12.23	10.25	6.09	1.46	.00	.00	43.45
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER — BEG 4/26 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	3.43	6.45	10.61	8.85	5.22	1.07	.00	.00	35.74
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER — BEG 3/29 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.33	3.09	5.62	9.52	7.92	3.76	.94	.00	.00	32.19
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER — BEG 4/15 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.54	3.43	6.45	10.61	8.85	5.22	1.07	.00	.00	36.17
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.89	3.09	5.62	9.52	7.92	3.76	.94	.00	.00	31.74
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER — BEG 4/18 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.43	3.09	5.62	9.52	7.92	3.76	.94	.00	.00	31.28
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	5.21	8.98	7.92	4.63	1.07	.00	.00	28.61
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS — BEG 4/30 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.52	6.45	10.06	13.51	.00	.00	.00	.00	32.56
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT — BEG 4/30 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.52	4.38	11.69	10.72	6.68	2.11	.00	.00	38.10
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.89	6.49	9.36	12.78	10.25	4.63	.55	.00	.00	44.95
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.89	2.07	3.55	3.02	3.26	2.00	.28	.00	.00	15.07
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.58	11.50	9.74	.64	.00	.00	.00	24.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.87	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.20	8.37	8.81	.52	.00	.00	.00	19.90
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	5.14	8.50	5.02	.00	.00	.00	.00	.00	19.81
AV. PAN FACTOR	.00	.00	.00	.38	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	3.50	10.38	10.25	5.44	.22	.00	.00	30.52
AV. PAN FACTOR	.00	.00	.00	.00	.33	.40	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	4.34	11.89	5.80	.00	.00	.00	.00	22.75
AV. PAN FACTOR	.00	.00	.00	.00	.33	.48	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	4.94	6.78	.00	.00	.00	.00	.00	.00	12.86
AV. PAN FACTOR	.00	.00	.00	.38	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.13	6.66	8.35	5.17	.57	.00	.00	22.88
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.24	5.75	8.12	11.12	8.01	.58	.00	.00	.00	34.81
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.13	4.17	6.62	.00	.00	.00	.00	.00	.00	11.92
AV. PAN FACTOR	.00	.00	.00	.37	.57	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.27	6.58	9.29	2.30	.00	.00	.00	.00	.00	19.44
AV. PAN FACTOR	.00	.00	.00	.41	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	3.72	11.39	10.23	4.52	.00	.00	.00	30.59
AV. PAN FACTOR	.00	.00	.00	.00	.33	.42	.86	.92	.74	.00	.00	.00	

WA683.43.1.

Table WA683.43.1 - Guidelines for interpretation of water quality for irrigation.

IRRIGATION PROBLEM	DEGREE OF PROBLEM		
	No Problem	Increasing Problem	Severe Problem
SALINITY (affects crop water availability)			
ECw(mmhos/cm)	< 0.75	0.75-3.0	>3.0
PERMEABILITY (affects infiltration rate into soil)			
EC_w(mmhos/cm)	> 0.5	0.5-0.2	< 0.2
adj.SAR 1/2/			
Montmorillonite (2:1 crystal lattice)	< 6	6-9 3/	> 9
Illite-Verticulite (2:1 crystal lattice)	< 8	8-16 3/	> 16
Kaolinite-sesquiozides (1:1 crystal lattice)	< 16	16-24 3/	> 24
SPECIFIC ION TOXICITY (affects sensitive crops)			
Sodium 4/5/ (adj.SAR)	< 3	3-9	> 9
Chloride 4/5/ (meg/1)	< 4	4-10	> 10
Boron (mg/1)	< 0.75	0.75-2.0	>2.0
MISCELLANEOUS EFFECTS (affects susceptible crops)			
NO_3-N (or) NH_4-N (mg/1)	< 5	5-30	> 30
HCO_3 (mg/1) (overhead sprinkling)	< 1.5	1.5-8.5	>8.5
pH	(Normal range 6.5-8.4)		

/ adj. SAR means adjusted Sodium Absorption Ratio.

/ Values presented are for the dominant type of clay mineral in the soil since structural stability varies between the various clay types (Rallings, 1966, and Rhoades, 1975). Problems are less likely to develop if water salinity is high; more likely to develop if water salinity is low.

/ Use the lower range if EC_w < .4 mmhos/cm;
Use the intermediate range if EC_w = 0.4 - 1.6 mmhos/cm;
Use upper limit if EC_w >1.6 mmhos/cm.

/ Most tree crops and woody ornamental are sensitive to sodium and chloride (use values shown). Refer to Table WA682.40.1 for crop tolerance levels.

/ With sprinkler irrigation on sensitive crops, sodium or chloride in excess of 3 meq/l under certain conditions has resulted in excessive leaf absorption and crop damage.

(ii) These guidelines are practical and usable in general irrigated agriculture for evaluation of the more common constituents in surface waters, underground waters, drainage waters and sewage effluents. They are not intended to evaluate the more unusual or special constituents sometimes found in waste waters such as pesticides and trace metals.

(iii) The guidelines are based on certain assumptions. These should be clearly understood.

(iv) To use the guidelines, certain laboratory determinations and calculations are needed. The adjusted sodium adsorption ratio (adj.SAR) should also be calculated from the laboratory determinations. The calculation procedure is given in Part WA683.44.

(2) Assumptions in the Guidelines.

(i) The water quality Guidelines presented in Table WA683.43.1 are intended to cover a wide range of conditions in irrigated agriculture and incorporate the newer concepts in soil-water-plant relationships. However, several basic assumptions must be made to better define the range of usability of these Guidelines. They may need adjustment or a new set prepared if the water is used under conditions which are greatly different from these stated conditions or assumptions. If the assumptions are understood, the Guidelines should be useful as a practical guide to evaluate the suitability of the water for irrigation. The basic assumptions in these Guidelines are:

(a) Use of water. The soil texture is sandy loam to clay loam, with good internal drainage. The climate is semi-arid to arid where effective annual rainfall is low. Drainage is assumed to be good and no uncontrolled shallow water table is present. Full production capability of all crops is assumed when the Guidelines indicate water quality is not a problem. The existence of a potential problem indicates the use of certain tolerant crops may be necessary to maintain full production capability and does not indicate the water is unsuitable for use on any crop. Refer to Table WA682.40.1 for crop tolerance levels and expected yield decrease.

(b) Methods and timing of irrigations. Surface and sprinkler methods of irrigation are assumed, including flood, basin, strip-check, furrow, corrugations and sprinklers, or any other which applies water on an "as needed" basis. This assumes that the crop utilizes a considerable portion of the stored soil water before the next irrigation. With these irrigation methods about 15% of the applied water is assumed to percolate below the rooting depth. The Guidelines are believed to be too restrictive for drip (trickle) irrigation and high frequency (near daily) sprinkler irrigation.

A683.43(a)(2)(i)(c)

(c) Uptake of water by crops. Uptake of water by the crop takes lace from wherever water is most readily available in the rooting depth. ach irrigation will leach the upper soil area and maintain it at a relatively ow salinity. Salinity will usually increase with depth and be greater at the ower part of the rooting area. The average salt concentration of the soil olution of the rooting depth is assumed to be three times the concentration f the salts in the applied water and is believed to be representative of the alinity to which the crop responds. This corresponds to a leaching fraction f 16% on the basis of the 40-30-20-10% uptake of water by the crop and verage root zone salinity.

(d) Degree of problem. The division of Table WA683.43.1 into "No oblem," "Increasing Problem," and "Severe Problem" is arbitrary since anges occur gradually and there is no clear-cut breaking point. Changes of to 20% above or below the guideline values may have little significance if nsidered in proper perspective with other factors affecting yield. Many eld studies and observations, as well as carefully controlled research periments were used as a basis for this division. The divisions have proven be practical under productive agriculture conditions.

(ii) Large deviations from these assumptions might make it unsafe to e water which would otherwise be considered safe, or conversely, make it fe to use water which, under the assumed conditions, would be considered zardous or of doubtful quality. Where sufficient experience, field trials, search or observations are available, the guidelines can be modified to fit re closely to local conditions. Specific conditions that may modify these lues include the leaching fraction, the conditions of drainage, method of rigation, the climate and rainfall, physical soil conditions, tolerance to linity of crops grown, and the chemical properties of the soil.

(iii) The guidelines assume $3EC_w = EC_{sw}$, $1.5\ EC_w = EC_e$ and $C_e = EC_{sw}$ where EC_w, EC_e, EC_{sw} are the electrical conductivity of e water, saturation extract of the soil, and drained soil water, spectively in mmhos/cm.

683.44 Calculation of adj. SAR.

(a) The adjusted Sodium Adsorption Ratio (adj. SAR) is calculated from e following equation:

$$\text{adj. SAR} = \frac{Na}{\sqrt{\frac{Ca+Mg}{2}}} \quad (1+(8.4 - pHc))$$

re Na, Ca and Mg are in meq/l from the water analysis. The manual culation pocess for determining pHc can become vary tedious. The Extension vice computer network, AGNET, has a program "SOILSALT" that will compute adj. SAR from the elements determined from a water analysis.

WA683.45 Salinity problem discussion.

(a) A salinity problem due to water quality occurs if salts from the applied irrigation water accumulate in the crop root zone and yields are affected. The potential salinity problem caused by these salts in the irrigation water is evaluated by the guidelines of Table WA683.43.1.

(b) With shallow water tables, a salinity problem may also exist due to upward movement of water and salts from the ground water as the water evaporates from the soil or is used by the crop. Such a salinity problem is related to high water tables and the lack of drainage; it is only indirectly related to salts in the irrigation water. Such a salinity problem is not included within the evaluation of the guidelines. However, once the drainage problem is solved and the shallow water stabilized, the guidelines will apply.

(c) Most of the salts added with the irrigation water are left behind in the soil as water is removed by the crop. These may accumulate and reduce the availability of soil water to the crop. To avoid salt accumulation to an excess level, they must be removed in amounts about equal to the salts applied (salt balance concept). To dissolve and remove the salts, adequate water must be applied to allow percolation through the entire root zone (leaching). Winter rainfall or inefficiencies of irrigation may accomplish this.

(d) If by leaching a long term salt balance is achieved, the average soil salinity of the root zone will be closely associated with the quality of the irrigation water applied as well as with the fraction of water moving through the root zone.

(e) If the water management, as locally applied, accomplishes more leaching than the guidelines have assumed, salts will not accumulate to as great an extent, and slightly higher salinity in the irrigation water could be tolerated. If leaching is less, salts will accumulate to a greater extent and salinity problems and yield reductions may be experienced at lower water salinity (EC_w) than the guidelines indicate.

WA683.46

WA683.46 Management alternatives for salinity problems.

(a) The major objective in choosing a management procedure to overcome a salinity problem is to improve soil water availability to the crop. Some of the management practices include:

(1) irrigate more frequently to maintain a more adequate soil water supply to the crop,

(2) routinely use extra water to satisfy the leaching requirement;

(3) change method of irrigation to one that will give better salt control;

(4) change cultural practices.

(b) More drastic practices to improve or restore productivity of a salt-affected soil might include:

(1) leach as needed to reduce concentration of accumulated salts;

(2) improve the uniformity of slope or level of land to allow for more uniform water application;

(3) modify soil profile to improve downward water percolation;

(4) establish artificial drainage if water tables are a problem;

(5) change cultural practices or plant crops that are tolerant of an existing or potential salinity problem;

(6) change water supply.

SUBPART E - CONSUMPTIVE USE REQUIREMENTS

WA683.50 Monthly consumptive use rates.

(a) Water use by crops is influenced by several climatic factors; the most significant of which are temperature and sunlight. Since these values vary from day to day and month to month, water use rates will also vary. Consumptive use rates may be computed for any time period, however, monthly values are usually determined because of the availability of climatic data that is summarized on a monthly basis.

(b) Appendix B contains stations that reflect the estimated total consumptive use of water by season and month by various crops; the amount of effective rainfall (50% chance of occurrence) which may be expected; net irrigation requirements for each crop; and growing seasons by crop. Weather data period used for determining consumptive use was 1951-1980 1/ unless otherwise noted.

(c) Consumptive use data can be developed for other locations by furnishing a 10 year average of monthly temperature and precipitation.

(d) To determine the amount of irrigation water that should be applied each month, it is necessary to consider the following:

(1) The amount of water necessary to refill the root zone, depleted through crop consumptive use, to field capacity.

(2) The amount to be added to each month's needs because of losses in application. This will vary with soils, the irrigation system, field efficiencies, and the management provided by the operator.

(3) The amount to be applied near the end of the use season, to restore the soil moisture level to field capacity.

(4) The amount of effective precipitation, recognizing that all moisture that falls does not contribute to soil moisture or decrease consumptive use.

1/ Climatography of the U.S. No. 81 by NOAA, September 1982

WA683.51(b)

WA683.51 Average daily and peak period consumptive use rates.

(a) While other factors may have a minor influence on the rate of consumptive use for a given period of time, air temperature and net depth of irrigation application have the greatest influence.

(1) Temperature. An analysis of daily mean air temperature records for any month at any location will show that the mean temperature for the warmest consecutive 5-day period will be greater than that for the warmest 10-day period. Likewise, the mean temperature for the warmest consecutive 10-day period will be greater than that for the warmest 15-day period, and so on. All will be greater than the mean monthly temperature. Since consumptive use, as estimated by the FAO modified Blaney-Criddle formula, is directly related to air temperature, it is obvious that the shorter the period is in days, the greater will be the mean temperature and therefore the greater will be the consumptive use rate.

(2) Net irrigation application. The length of the period is that number of days in which the normal net irrigation application will last under the rate of use for the period. Thus smaller net irrigation applications will last for smaller periods of time and will result in a greater daily use rate for a given time period and conversely higher net irrigation applications will result in a lower use rate.

(3) Daily use rates. Table WA683.51.1 shows peak daily consumptive use rates as related to peak monthly use and net irrigation application. When the computed monthly consumptive use rate is for the peak use month, the tabular value is the peak period daily use rate.

(4) Peak period consumptive use rates. Information on peak daily consumptive use rates is needed to properly design irrigation systems. It is used to determine the minimum capacity requirements of main and lateral canals, pipelines, and other water conveyance or control structures. The peak period rates of water used by crops also influence the administration of streams and reservoirs from which irrigation water supplies are obtained.

(b) In irrigation system design, the peak period of consumptive use is the period during which the weighted average daily rate of consumptive use of the various crops grown in the project area is at a maximum. Different crops may have their peak rates of use at different times. Therefore, some crops may not be using water at their maximum rate during the project peak period. In fact, some of the crops may not even be growing during this period.

(c) The irrigation frequency during peak period use may be calculated by the formula:

$$\text{Irrigation Frequency in Days} = \frac{\text{Net Irrigation Application}}{\text{Peak Period Daily Use Rate}}$$

Example:

Crop: Alfalfa (5-ft root depth) at Othello

Peak Month Consumptive Use Rate: 9.82" (July) (Appendix B - Consumptive Use by Station)

Soils: Quincy LFS with 5.5" water-holding capacity in a 5-ft irrigation depth. (Appendix A - Irrigated Soils Tables)

Available water: 50 percent of 5.5" = 2.75" (Table WA682.30.2 or WA682.50)

Net irrigation application: 2.75"

Daily peak consumptive use with 2.75" net application with peak month use of 9.82" is 0.38 inches (Table 683.51.1)

Irrigation frequency: $\frac{2.6}{0.38}$ = 6.8 or 7 days

(d) Once the frequency of irrigation is determined, it is possible to design for ditch or pipeline capacities using the same information.

Example:

Crop: Alfalfa = 120 acres
Irrigation efficiency: 70 percent (Table WA684.20.4)
Gross application = $\frac{\text{(Irrigation Freq. (days))} \times \text{(Daily Cons. Use (in.))}}{\text{(System Application Efficiency)}}$

$$= \frac{7 \text{ days} \times 0.38 \text{ in/day}}{.70} = 3.8"$$

120 acres x 3.8" - 456 acre-inches every 7 days or 65.1 ac-in/day

65.1/24 = 2.71 acre-inches per hour (assuming 24-hour/day operation).

One cfs for one hour is equivalent to 0.992 acre-inches per hour. For ease in computation, the conversion is taken to be: 1 cubic foot per second (cfs) is the same as one acre-inch per hour or 450 gallons per minute (gpm).

Conveyance system design, Q = 2.71 ac-in/hr or 2.71 cfs.

The following formula can also be used:

$$Q = \frac{\text{Peak Daily Cons. Use} \times 100 \times \text{Ac}}{\text{Field Efficiency} \times 24} = \text{cfs needed}$$

WA683.51(d)

Solution:

$$Q = \frac{.38 \times 100 \times 120}{70 \times 24} = 2.71 \text{ cfs}$$

(e) The above example assumes a continuous water supply and provides the minimum conveyance design capacity. When the water delivery time is less than the irrigation frequently, the water delivery time is used instead of the irrigation frequency when using the gross application method. When using the Peak Consumptive Use formula, the result must be multiplied by the ratio of:

$$\frac{\text{Irrigation Frequency (days)}}{\text{Water Delivery Time (days)}}$$

Example:

In the preceding example, assume a water delivery time of 66 hours or 2.75 days.

Gross Application Method

120 acres x 3.8" = 456 ac-in in 66 hours

456/66 = 6.9 ac-in per hour

Design Q = 6.9 cfs

Peak Consumptive Use Formula

$$Q = \frac{0.38 \times 100 \times 120}{70 \times 24} = 2.71 \times \frac{7 \text{ days}}{2.75} = 6.9 \text{ cfs}$$

(TABLE WA683.51.1 FOLLOWS)

Table WA683.51.1 - Daily Consumptive Use Rate (u_p) as Related to Estimated Actual Monthly Use (u_m)

Net Irrigation Application I (Inches)	Monthly Peak Consumptive Use Rate (u_m) in Inches 1/																
	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	11.0	
	Daily Peak Consumptive Use Rate (u_p) in Inches Per Day																
1.0	.11	.13	.15	.18	.20	.22	.24	.26	.28	.31	.33	.35	.37	.40	.42	.46	
1.5	.11	.13	.15	.17	.19	.21	.23	.25	.27	.29	.32	.34	.36	.38	.40	.45	
2.0	.11	.13	.15	.16	.18	.20	.23	.25	.27	.29	.31	.33	.35	.37	.39	.44	
2.5	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.39	.43	
3.0	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.38	.42	
3.5	.10	.12	.14	.16	.18	.19	.21	.23	.25	.27	.29	.31	.33	.35	.37	.41	
4.0	.10	.12	.14	.15	.17	.19	.21	.23	.25	.27	.29	.31	.33	.35	.37	.41	
4.5	.10	.12	.14	.15	.17	.19	.21	.23	.25	.27	.29	.31	.33	.35	.37	.41	
5.0	.10	.12	.13	.15	.17	.19	.21	.23	.25	.26	.28	.30	.32	.34	.36	.40	
5.5	.10	.11	.13	.15	.17	.19	.21	.22	.24	.26	.28	.30	.32	.34	.36	.40	
6.0	.10	.11	.13	.15	.17	.19	.20	.22	.24	.26	.28	.30	.32	.34	.36	.40	

1/ Based on the formula $u_p = 0.034\ u_m^{1.09}\ I^{-.09}$

u_p = Daily peak consumptive use rate in inches per day.

u_m = Monthly peak consumptive use rate in inches per month.

I = Net irrigation application in inches.

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PART WA684 - IRRIGATION METHODS SELECTION

SUBPART A - GENERAL

WA684.10 Irrigation methods.

(a) Irrigation water application is commonly designated according to the manner in which water is applied to the soil. There are four basic methods of applying water:

(1) Sprinkler irrigation--the soil surface is wetted much as it is by rainfall.

(2) Surface irrigation--water is applied by complete flooding or in furrows, wetting only part of the surface.

(3) Below surface or sub-irrigation-water is applied beneath the surface, wetting the surface little if at all.

(4) Trickle irrigation--filtered water is applied through an extensive pipe system to each individual plant.

(b) Methods of applying irrigation water vary with topography (including any land preparation), soil conditions, crops to be grown, value of the crops, cultural practices, and available water supply. Each method has certain limitations. Most can be adapted to a fairly wide range of conditions. On some sites, several methods of water application are suitable. On other sites, only one method can be used. In some areas, farmers have become accustomed to particular methods of applying water and continue to use them even though others are more desirable and economical.

Sound planning must consider for each suitable method: (1) the cost and ease of installation, (2) maintenance required, (3) labor and skill required for operation, (4) ease with which it can be fitted into the farm enterprise. To get acceptable irrigation efficiency, skill of the operator and flexibility of the system must be considered, along with the irrigator's wishes, in selecting the best method of applying water.

SUBPART B - ADAPTATIONS, ADVANTAGES AND LIMITATIONS

WA684.20 Advantages and limitations.

Tables WA684.20.1, WA684.20.2, WA684.20.3, and WA684.20.4 are listings of factors affecting water application methods. The adaptability, advantages and limitations of irrigation methods applicable to Washington are contained in these tables. Additional information can be found in the National Engineering Handbook, Section 15, Irrigation, Chapter 3, Planning Farm Irrigation Systems. Information on methods not discussed in NEH-15 will be included herein as needed.

(MORE)

WA684.20.1

Table WA684.20.1 - Factors Affecting the selection of a Water-Application Method - General

Water Application Method	Factors Affecting Selection			
	Land Slope	Water Intake Rate of the Soil	Water Tolerance of Crops	Wind Action
Sprinkler	Adaptable to both level and sloping ground surfaces. 1/	Adaptable to any soil intake rates.	Adaptable to most all crops. May help promote fungi and disease on foliage and fruit.	Wind may affect application efficiency
Surface	Land area must 2/ either be leveled or graded to limited slopes or contours (0 to 1.0 percent slopes for most systems). It sometimes is possible to flood slightly steeper slopes that are sodded.	Not generally recommended for soils with high intake rates of > 1.0 inches per hour or with extremely low intake rates such as peats and mucks.	Adaptable to most crops. May be harmful to root crops and to plants that cannot tolerate water standing on roots.	High winds may affect the application efficiency on bare soil. Usually not considered a factor.
Trickle	Adaptable to all land slopes.	Adaptable to all intake rates.	No problems.	No
Subirrigation	Land area must be level or graded to limit slopes or contours.	Adaptable only to medium to fine textured soils with moderate to good capillary movement.	No problem.	No

1/ High rate sprinkler irrigation slopes should be tested against these parameters:
   a. Slope % x CEI not > 50
   b. Slope % x CEI not > 100 (for Alfalfa)
   c. Slope % x CEI not > 150 (for pasture and grass)

2/ Maximum surface irrigation slopes should be tested against these parameters:
   a. Slope % x CEI not > 12
   b. Slope % x CEI not > 24 (for Alfalfa)
   c. Slope % x CEI not > 36 (for pasture and grass)

Table WA684.20.2 - Factors Affecting the Selection of Sprinkler Irrigation Systems

Type of System	Maximum Slope	Shape of Field	Field Surface Conditions	Max. Height of Crop	Labor Required	Cooling and Frost Protect.	Pesticide Application 1/	Fertilizer Application 1/	Liquid Animal Waste Distribution 2/
	(percent)			(feet)	(hr/ac/irr)				
Hand moved:									
Portable set	20	Rectangular	No limit	No limit	0.50-1.50	no	yes	yes	Not Recommended
Solid Set	No limit	Any shape			0.20-0.50	yes	yes	yes	
Tractor moved:									
Skid-mounted	5-10	Rectangular	Smooth enough for safe tractor operation.	No limit	0.20-0.40	no	yes	yes	yes
Wheel-mounted	5-10				0.20-0.40	no	yes	yes	yes
Self-moved:									
Side-wheel-roll	5-10	Rectangular	Reasonably smooth	4	0.10-0.30	no	yes	yes	yes
Side-move	5-10			4-6	0.10-0.30	no	yes	yes	yes
Self-propelled:									
Center-pivot	5-15	Circular	Clear of obstructions, path for towers	8-10	0.05-0.15	no	yes	yes	yes
Lateral-move	5-15	Square or Rectangular		8-10	0.05-0.15	no	yes	yes	yes
Single-Sprinkler:									
Hand-moved	20	Any shape	No limit	No limit	0.50-1.50	no	yes	yes	Not Recommended
Self-propelled	No limit	Any shape	Lane for winch & hose	No limit	0.10-0.30	no	yes	yes	yes
Boom-Sprinkler:									
Tractor-moved	5	Any shape	Safe operation of tractor	8-10	0.20-0.50	no	yes	yes	yes
Self-propelled	5	Any shape	Lane for boom & hose	8-10	0.10-0.50	no	yes	yes	yes
Permanent Set:									
Manual or Automatic	No Limit	Any shape	No limit	No Limit	0.05-0.10	yes	yes	yes	yes
Trickle (Drip)	No Limit	Any shape	No limit	No Limit	0.05-0.15	no	yes	yes	no

1/ Pesticide and fertilizer application is possible by all methods; however, uniformity and affectiveness is governed by system efficiency and the level of operation management.

2/ May increase the deterioration of the metal portions of the system. Due to nozzle size, solid separation is generally recommended. Maximum solid diameter should be 25% of the diameter of the smallest nozzle on the system.

WA684.20.3

Table WA684.20.3 - Factors Affecting the Selection of Surface Irrigation Systems

Type of System	Maximum Slope 1/ on Arid Areas		Shape of Field	Adaptable to			Labor Required
	Non-Sod Crops	Sod Crops		Row Crops (Row or Bedded)	Sown, Drilled, or Sodded Crops	Orchards and Vineyards	
	(percent)						(hrs/ac/irr)
Level: Level Border	Nearly Level		Any Shape	yes	yes	yes	0.10-0.5
Contour Levee	0.1			yes	yes	yes	0.05-0.5
Level Furrow	Nearly Level		Rows should be of equal length	yes	yes	yes	0.20-0.7
Automated Furrow	3.0	N/A	Rows should be of equal length	yes	N/A	yes	0.05-0.25
Graded: Graded Border	2.0	4.0	Rectangular	no	yes	yes	0.20-1.0
Contour Ditch	4.0	15.0	Any Shape	yes	yes	yes	1.00-2.0
Graded Furrow	3.0	N/A	Rows should be of equal length	yes	yes	yes	0.40-1.2
Corrugation	4.0	8.0	Rectangular	no	yes	N/A	0.40-1.2
Contour Furrow	Cross-Slope		Rows should be of equal length	yes	no	yes	0.50-1.5

1/ Maximum surface irrigation slopes should be tested against these parameters;
   a. Slope % x CEI not > 12
   b. Slope % x CEI not > 24 (for Alfalfa)
   c. Slope % x CEI not > 36 for pasture and grass)

Table WA684.20.4 - Expected Irrigation Method Efficiencies in Washington 1/

Method	Efficiency
Level Border	75
Graded Border	70
Flood Irrigation	50
Contour Ditch	50
Level Furrow	65
Graded Straight Furrow	60
Graded Contour Furrow	60
Corrugations	60
Subirrigation-Water Table Control	65
Subirrigation-Trickle	70
Trickle-Point Source Emitter	90
Trickle-Spray Emitter	85
Trickle-Continuous Tape	90
Handline/Wheel line	65
Big Gun (Fixed Place)	60
Traveling Gun	65
Solid Set (Above Canopy)	65
Solid Set (Below Canopy)	70
Center Pivot	70
Linear Move	70

1/ Efficiencies in this case are defined as the ratio of the volume of water delivered to the volume of water reaching the soil and stored for plant use. More detailed information is contained in NEH 15.

The values presented here have been discounted for evaporation, wind drift, deep percolation, runoff and component uniformity. An average seasonal wind velocity of 5 mph in a semi-arid environment was assumed. Additional information on sprinklers can be found in Table WA685.54.1.

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PART 685 - IRRIGATION METHODS AND DESIGN CRITERIA

SUBPART A - GENERAL

WA685.10 Design criteria and standards.

(a) Design criteria for each of the methods of irrigation water application are contained in the appropriate chapters of National Engineering Handbook, Section 15 or referenced manuals. Design criteria and examples of irrigation methods most common to Washington are included in this guide.

(b) Standards for irrigation practices are contained in the National Handbook of Conservation Practices, in Section IV of local field office technical guides.

(c) The Washington State Construction and Material Specifications are located in Volume II of the Washington State "Handbook of Engineering Design Aids".

WA685.11 Use of design criteria.

Soil intake rates may vary throughout an irrigation season. As well as soil intake rates, consumptive use varies due to changes in temperature and precipitation from season to season. An irrigation guide is valuable only in giving general guidance for layout and operation of an irrigation system. The physical layout can be installed in accordance with data in the guide and operational adjustments then made for differences in factors such as intake rates and net application depths.

SUBPART B - LEVEL BORDERS OR BASINS

WA685.22(a)

WA685.20 Description.

Level border irrigation is a method of controlled surface flooding. The field to be irrigated is generally divided into strips by parallel dikes or border ridges, and each strip is irrigated separately. Water application is accomplished by ponding. The border strips have no slope in the direction of irrigation, and they are closed at the ends so the water is retained and absorbed into the soil. The irrigation stream must be large enough to cover the entire strip in a relatively small proportion of the time required for the soil to absorb the desired amount of water. The stream is turned off when the desired volume of water has been applied to the strip.

WA685.21 Design limitations.

(a) Limitations are few; however, accurate land leveling is generally needed. Also, maintenance of a level surface is essential; such maintenance may require changing tillage operations or using special tools, or both. An adequate border ridge height may be difficult to maintain if the ridge is constructed of sandy soil or of a fine-textured soil that cracks when dry. Excessive ponding and possible scalding can occur if the system is poorly managed. In some areas special provisions must be made for surface drainage. Drop structures, lined ditches, or pipelines may be required for adequate water control on steep slopes that require benching. Relatively large irrigating streams are needed; in some places two or more turnouts per border strip must be installed so that water is supplied at the needed rate without causing erosion.

WA685.22 Design Procedures.

(a) Due to limited irrigation stream sizes, level border irrigation is little practiced in Washington State. For design information refer to NEH-15, Chapter 4, Border Irrigation.

SUBPART C - GRADED BORDERS

WA685.30 Description.

(a) Graded border irrigation is a method of controlled surface flooding. The field to be irrigated is divided into strips by parallel dikes or border ridges, and each strip is irrigated separately. Water is introduced at one end and progressively covers the entire strip.

(b) This is a balanced advanced-and-recession kind of water application. The border strips have some slope in the direction of irrigation, and the ends usually are not closed. Each strip is irrigated by turning in a stream of water at the upper end. The stream size must be such that the desired volume of water is applied to the strip in a time equal to, or slightly less than, that needed for the soil to absorb the net amount required. When the desired volume of water has been delivered onto the strip, the stream is turned off. The water temporarily stored on the ground surface then moves on down the strip and completes the irrigation. Uniform and efficient application of water depends on the use of an irrigation stream of the proper size. Too large a stream results in inadequate irrigation at the upper end of the strip or excessive surface runoff at the lower end. If the stream is too small, the lower end of the strip is inadequately irrigated or the upper end has excessive deep percolation.

WA685.31 Design limitations.

The use of graded borders is limited by the need for:

(a) Complete elimination of cross slope, where soil intake characteristics or irrigation grades, or both, require small irrigating streams.

(b) Topography that is relatively smooth or soils that are deep enough to permit adequate leveling.

(c) Considerable skill in irrigating, and skilled irrigators who often are not readily available.

(d) Large irrigation stream size.

WA685.32 Design procedures.

(a) Due to limited irrigation stream sizes graded border irrigation is little practiced in Washington State. For design information refer to NEH-15, Chapter 4, Border Irrigation.

SUBPART D - FURROW AND CORRUGATIONS

WA685.40 Description.

(a) Furrow irrigation is a method of applying water to the soil to meet crop needs by introducing a specific water flow rate to shallow evenly-spaced channels (furrows or corrugations). These small channels convey the water down or across the slope of the field to the vicinity of plants growing in the furrows or on the beds between the furrows. This method differs from border irrigation in that only a portion of the ground surface is covered with water. Water enters the soil by both vertical and horizontal infiltration. The furrow stream is applied until the desired application depth and lateral penetration is obtained. The time that water must be applied in the furrows is dependent upon the volume of water required to fill the soil profile to the desired depth, the intake rate of the soil, and the spacing of the furrows. Land grading to provide uniform slopes is essential to permit uniform water application and efficient irrigation.

(b) There are two main types of irrigation using small channels as a method of water application. These types are separated according to the kinds of crops and type of furrows used in distribution of the irrigation water. The two types are commonly referred to as furrow irrigation and corrugation irrigation.

(1) Furrow irrigation is primarily used to irrigate clean tilled crops planted in rows. Normally, there is one furrow between crop rows except for bedded crops where two rows are planted on each bed. In these cases, the furrows are along each pair of rows. The size and shape of the furrows vary with the crop grown, the equipment used, and the spacing between crop rows. Furrow irrigation also includes applying water to small grain, or similar crops, drilled on flat-top furrow beds and irrigated under either bare ground or low vegetative retardance conditions.

(2) Corrugation irrigation is primarily used to irrigate non-cultivated close-growing crops using small closely-spaced channels down the steepest slope of the field. Corrugations are also commonly used to guide irrigation streams on bordered fields. In this case, the design is based on the border method instead of the corrugation method. Corrugations are frequently formed after the crop has been seeded. In case of a perennial crop they are reshaped as needed to maintain the desired channel cross-section.

WA685.40(c)

(c) Water application principles are the same for both the furrow and corrugation methods, with spacing, size, shape, and retardance characteristics the primary differences. Corrugation stream sizes are relatively short because of the smaller size of furrow generally used and the resistance to flow caused by the growing crop. The first type will be discussed in this chapter as furrows and the second type as corrugations, in accordance with their respective differences as discussed above. Any small water channel is defined as a furrow. In discussing these channels as they apply to both the furrow and corrugation method, the term "furrow" will include corrugation channels as well as channels for furrow irrigation systems.

WA685.41 Design limitations.

Furrow and corrugation design tables and charts allow a wide selection in length of run, grade and furrow streams. However, for efficient uniform water application, specific guidelines or limitations should be observed in selecting the design to be recommended. Limitations include permissible deep percolation losses, allowable amount of runoff of irrigation water and minimum application efficiencies.

(a) Deep percolation. When water percolates below the root zone of the crop, the water not only is lost for consumptive use of the plants, but frequently contributes to a buildup of the ground water level, may damage or destroy lower lying land where it returns to the surface and waterlogs the soils. In addition to the loss of water, deep percolation results in the loss of plant food. An acre inch of water that percolates below the root zone frequently carries with it as much as 4 to 5 pounds of nitrogen. It may also unnecessarily leach soluble mineral from the underlying strata. Normally, deep percolation should not be more than approximately 20 to 25 percent of the design application depth.

(b) Runoff. Water-use regulations in many states , and some areas of Washington, now prohibit the irrigator from allowing irrigation water to leave the land that is under the irrigator's control. Runoff water frequently contains colloidal material, minerals and pesticides which are detrimental to adjoining landowners or to surface water. Runoff water can also be detrimental if ponded on neighboring farms or public or private property. It is extremely difficult to have efficient furrow or corrugation irrigation without tailwater. Provisions must be made for recovery or safe disposal of all the runoff resulting from irrigation regardless of operating procedures used. Runoff from rainfall is not as easily regulated. However, the system design must include needed facilities for its safe disposal.

(c) Design efficiency. The design efficiency is defined as the ratio of the desired depth of irrigation to the gross depth of irrigation water applied. Where the design depth of application is planned for a section other than the total length, such as 80 percent of the furrow or corrugation length, the design efficiency would be expressed as DE_{80}. Optimum efficiencies may not always be practical to obtain.

WA685.42 Design concepts.

It is necessary to make a certain number of assumptions or approximations in order to prepare design equations and tables for furrow and corrugation systems. These assumptions are sufficiently valid so that designs based on them will result in irrigation systems that can be irrigated efficiently and uniformly, with only the requirement of seasonal adjustments in stream size and application time. Design assumptions are made for intake-time relationships, rate of advance, time for recession, opportunity time, retardance coefficient and intake as related to furrow wetted perimeter. Figure WA685.42.1 illustrates these factors.

(a) Intake-time relationship. To theoretically obtain complete intake uniformity along the entire length of a furrow, it would be necessary for the opportunity time for intake at all points along the furrow to be equal. The closest methods of achieving this have been cablegation and surge flow. This is not possible with standard furrow or corrugation irrigation where water is applied at the upper end and progresses down the furrows over a period of time. The time that water is on segments of the system is, therefore, of different duration at points along the furrows or corrugations. For acceptable uniformity and adequacy of application, the minimum time that water should be on any point along the furrow length should not be less than required for intake of the desired net application. Also, the maximum application time should be such that excessive deep percolation losses will not occur. The time that water is on a given segment of the furrow is the opportunity time (T_o). This "T_o" is the time duration between the time the furrow stream reaches the furrow stations and the time when water disappears from the surface at these points. This time is equal to the time increment between the advance and recession curves. These two curves are of prime importance in the design of a furrow or corrugation irrigation system as they describe the intake opportunity time for the various segments along the furrow length. Figure WA685.42.1 illustrates these factors.

(b) Rate of advance. The rate of advance is primarily a function of the water flow rate entering the furrow, the soil intake rate, furrow shape, grade, length and the roughness of the furrow surface. The relationships involved in the flow of water in furrows or corrugations is complex. During the irrigation process, water enters into the upper end and advances along the length of the furrow. The flow rate is largest at the head of the furrow and becomes successively smaller at each point downstream because of the water lost to infiltration into the soil. The result is a reduction in the rate of advance at successive points downstream. If the length is such that the entire stream is absorbed by the soil, the advance stops. For efficient irrigation, a rapid rate of advance throughout the entire length must be obtained. Both cabelgation and surge flow incorporate this principle.

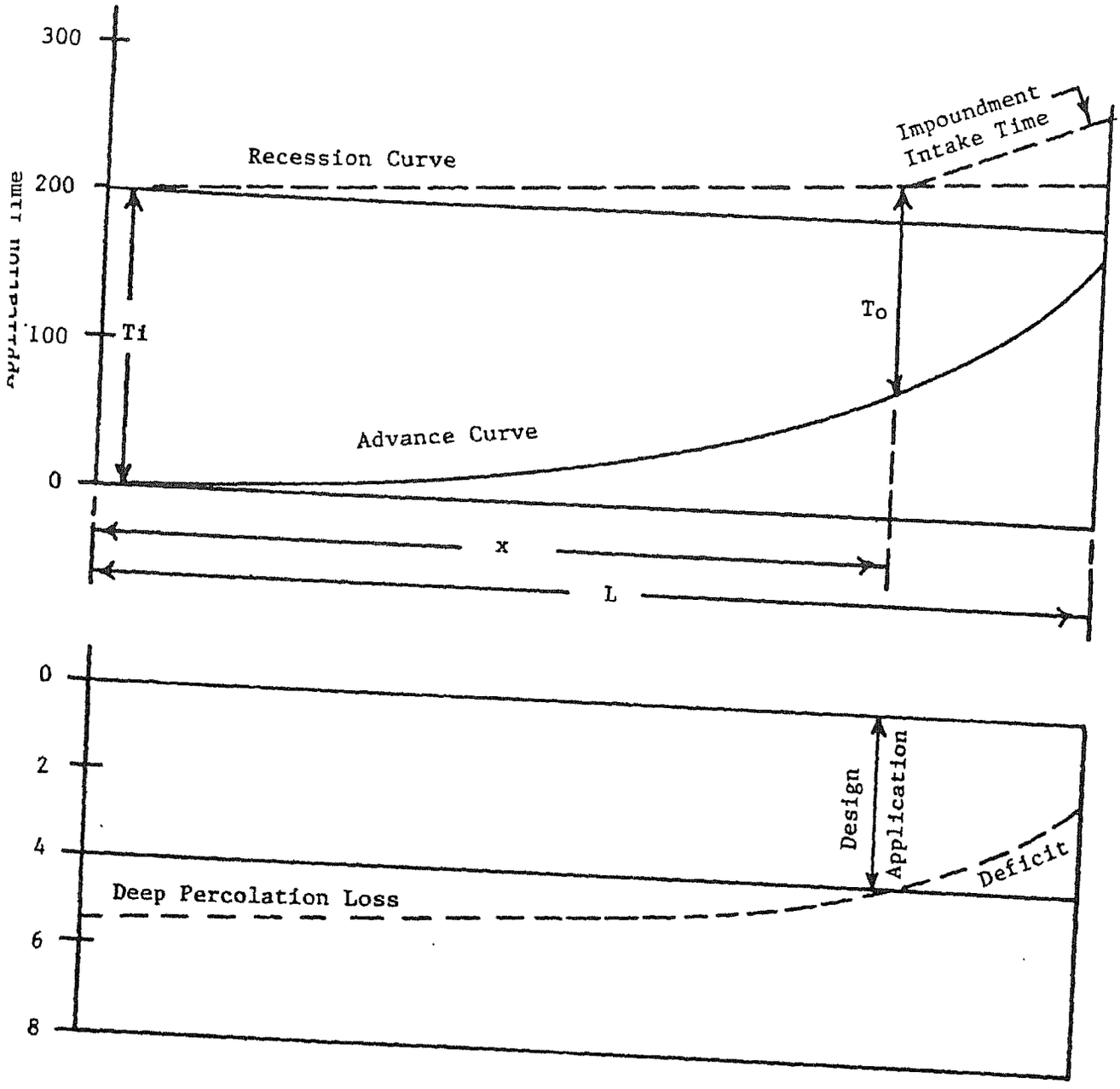


Figure WA685.42.1 - Application Time, Advance Recession vs. Intake Relationship

(c) Time for recession. The time for outflow of water to stop after inflow at the head of the furrow has ended, is defined as recession time (T_r). This time is mostly affected by flow rate, furrow length, shape and slope. The furrow surface generally becomes relatively smooth during the irrigation period so retardance has less influence on recession. The accumulation of crop residues in the furrows has a marked effect on the rate of recession, but to a lesser extent than on the rate of advance. In graded furrow or corrugation irrigation, the recession curve is relatively flat, and when grades exceed approximately 0.25 percent, the recession time is so short that it has little effect on the soil intake. When the grade is .05 percent or less, impoundment of the stream can be used to increase time of recession and, in this manner, balance the advance-recession curve. Because recession time is relatively short in comparison with needed intake time, it has little influence in graded furrow design. Recession time is taken into consideration in the opportunity time determination for a selected station. It is shown as zero in design equations for gradient furrows. However, a period of time is required for the furrow stream to build to the design flow volume after the advance stream reaches the design station, and this required buildup time and the recession time, for all practical purposes, cancel each other.

(d) Opportunity time. The design of a furrow system is based on opportunity time, T_o, or the time that water is on a given station in the furrow. For a constant inflow rate, the infiltration of water into the soil is less at successive points along a furrow length due to both a reduction in flow rate and opportunity time. A design based on the needed opportunity time at the upper end would result in inadequate intake for all successive stations down the furrow. A furrow system design based on the needed opportunity time for intake at the distal end of the furrow results in excessive intake at all stations upstream. Because the rate of advance decreases rapidly with increased length, systems may be designed to provide the opportunity time needed to apply the desired application at a point less than the entire length, for example, approximately 80 percent of the total length from the upper end. The best balance must be determined between excess application at the upper end and insufficient application depth in the section below the design point. This point must be selected after determining the effect of the application deficiency downstream of the design point on specific crops.

(e) Retardance coefficient. Knowledge of the behavior of water flowing in furrows is essential in developing efficient furrow irrigation system designs. The velocity and depth of flow will result when a specified flow rate is applied in a furrow of a certain cross-section and grade will depend on the roughness or retardance condition in the furrow. This retardance condition is represented by the Manning "n" in the equation.

$$Q = \frac{.0033}{n} \frac{A^{5/3}}{p^{2/3}} S^{1/2}$$

where

Q = flow in gpm
n = retardance coefficient
p = wetted perimeter of furrow in feet
S = furrow slope in ft per ft
A = cross-sectional area of water in the furrow, in square feet

WA685.42(e)

The Manning "n" varies with the furrow roughness, shape, and flow rate. Furrow roughness is readily altered by farm tillage equipment. Furrow and corrugation shapes also vary and, therefore, designs are based on the most common shapes. With the retardance and shape standardized, the flow rate becomes the determining factor. Most furrow streams are in the magnitude of 10 to 30 gpm and most corrugations stream 4 to 10 gpm. A study of furrow flows within this range indicates that designs based on retardance "n" value of .04 for furrows and .10 for corrugations will result in design values most appropriate for these methods of water application.

(f) Wetted perimeter. The wetted perimeter of a furrow or corrugation at any point is the cross-sectional area that is in contact with the flowing stream. The rate of infiltration in a furrow or corrugation is a function of this area. This contact area decreases as the distance from the inflow end increases and, therefore, the design formulas must take into account this decrease in wetted area to determine the intake at a given point along a furrow.

(g) Intake family curves. A series of intake family curves have developed that relate cumulative depth of intake to opportunity time. Each type of soil has unique intake characteristics. The differences between many soils, however, are so minor that for practical purposes they can be grouped together into one of a number of intake families. Variables other than inherent soil characteristics may influence the intake rates more than the specific differences between the individual soils placed together in one family. For design purposes, most soils, except those that crack by the time irrigation is needed, can be associated with one of these families. In case the soil has a higher or lower intake rate at the time of a specific irrigation, the application rate and time can be adjusted accordingly by use of a higher or lower adjacent intake rate curve. The intake curves developed for furrow or corrugation irrigation have the same general shape as curves developed for the border and the contour ditch methods. The furrow curves on a specific site will not necessarily be the same as the border curves, but should generally be parallel. There is no simple guideline such as the use of soil texture to govern the placement of a soil in a specific group. When field experience is inadequate to properly group the soil, field evaluations should be made of systems in operation. Such evaluations will provide reliable data for furrow and corrugation designs on specific soils of an area.

(1) The general formula describing the intake family curves is:

$$F = aT_o^{\,b} + 0.275$$

where

F = cumulated intake in inches for time "T"
a = intake in inches at unit time
T_o = opportunity time in minutes
b = rate of change in intake as related to opportunity time

The values for "a" and "b" are listed on figure WA685.42.2.

(2) Appendix A lists the estimated furrow intake families for soils in Washington. These values are based on field tests or are computer generated and should be used with good judgment. Additional intake family values will be provided as field evaluations are completed.

WA685.43 Design procedure.

(a) A furrow or corrugation system requires that a great many determinations be made in regard to soils, crops,, topography, size and shape of irrigable areas, farm equipment and farmer's operational practices and personal preferences before the specific design units can be selected. The designer must know the intake characteristics of each major soil type for placement in the proper design group. The rooting depths of the crops to be grown along with the available water-holding capacities of the soils will determine the normal design depth of application. The topography of the field will determine the direction of irrigation, and, in many cases, the grade of the corrugations or furrows and the appropriate lengths that will fit individual field boundaries. The farm equipment to be used will determine the spacing and the maximum capacity that can be expected. The farmer's operational practices will have an influence on whether a cut-back, tailwater recovery, and reuse or tailwater disposal system should be planned and what irrigation operating schedules would meet the farmer's needs. The size of furrow stream to use and time of application are both influenced by the operational method of water application. If the impoundment method is used, the application time will be relatively short and the application rate correspondingly high. A continuous stream with reuse facilities will have a different design than either of the other operation methods. Above all, the selected design and layout must meet with the owner's approval if the system is to be operated in a satisfactory manner. The selected design will be for a normal irrigation application, and adjustments may then be needed for application depth, time of application, and furrow flow rate for specific irrigations during the season.

WA685.42.2

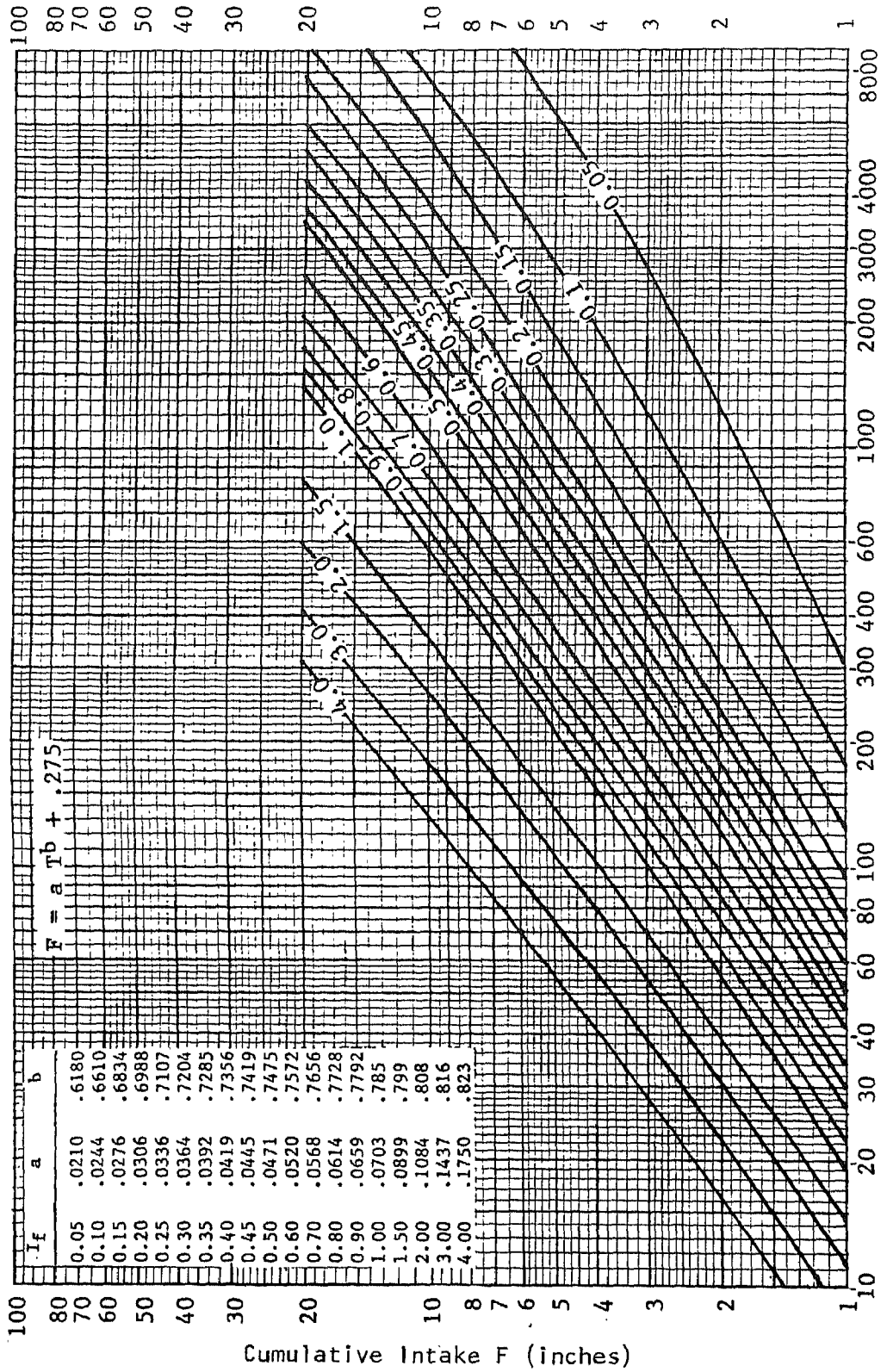


Figure WA685.42.2- Intake Families - I_F

(b) The normal depth of application, or a full irrigation, is the depth needed to bring the soil, within the water extraction depth of a mature crop, to field capacity after depletion to the management-allowed deficiency (MAD) level. The MAD should usually not be greater than 50 percent of the total available water-holding capacity of the soil (see Table WA682.30.2). The total amount of soil water held available for plant use in any soil is the sum of the available water-holding capacities of all horizons occupied by plant roots.

(c) Several other factors need to be considered when establishing the design application depth. It may be advantageous to increase or decrease the application depth to fit a practical application time schedule. A somewhat smaller application would result only in a slightly fewer number of days between irrigation, while a larger application will result in a somewhat larger loss through deep percolation and a corresponding lower efficiency. Adjustments in design application depths may also be needed when (1) alternate furrows are to be irrigated, (2) when smaller applications are desirable to leave storage capacity in the soil for rainfall, and (3) where water supplies are limited to the extent that smaller than normal applications are made to provide insurance against crop failure, rather than to produce optimum crop yields.

(d) Designs prepared for the application of the design depth must also be evaluated under conditions where smaller applications may be applied, such as early season irrigations.

WA685.44 Design charts and equations.

(a) General. Equations, tables, charts and programs for PC's and hand-held programmable calculators have been developed that determine the relationship between furrow length, inflow time, inflow rate, deep percolation, surface runoff, and field application efficiency. Selected design values of application depth, soil intake family, furrow slope, and spacing are needed inputs. Use of the tables, charts and programs are recommended to avoid the laborious calculations involved using the equations.

(b) NEH, Section 15, Chapter 5, Furrow Irrigation, contains charts for solving furrow irrigation design problems. It also contains discussion of assumptions and equations used for development of design charts. A limited presentation to develop an understanding of the procedures is presented; however, no attempt was made to duplicate complete discussion in this portion on furrow irrigation.

WA685.44(c)

(c) Gradient furrow design example - by using design charts

(1) A series of design charts have been prepared to simplify the design procedure for gradient furrows and eliminate the solution of equations.

(i) Design chart contents. The design charts are contained in Appendix I, National Engineering Handbook 15, Chapter 5, Furrow Irrigation. Each chart is for a specific intake family, furrow slope, design depth of application, furrow spacing, and Manning roughness coefficient. Each chart has four sets of inflow rate curves describing the relationship of furrow length to: (a) inflow time, (b) deep percolation, (c) runoff, and (d) application efficiency. Figure WA685.44.1 is an example of these charts. Solutions may be obtained from the charts for a known or assumed value of either inflow rate, deep percolation, runoff or efficiency paired with a known or assumed value or either inflow rate or furrow length. For example, for an assumed efficiency and inflow rate, the furrow length, runoff, deep percolation, and inflow time can be determined. Or, if the furrow length is fixed and a given inflow time is desired to provide for the most practical farm operating schedule, the inflow rate, deep percolation, runoff, and efficiency can be determined for the conditions of the chart.

(ii) Examples of use - design charts. The following example illustrates the use of the design charts for a specific gradient furrow irrigation system.

Intake family (I_F) = 0.3
Desired application depth (F_n) = 3.0 inches
Length (L) = 900 feet
Slope (S) = 0.004 ft/ft
Spacing (w) = 2.5 feet
Roughness coefficient (n) = 0.04

Using the chart illustrated in Figure WA685.44.1 and a furrow length of 900 feet, the following solutions are possible:

(a) Assume inflow time is 18 hours or 1080 minutes:

T_i = 1080 minutes L = 900 feet

At the intersection of inflow time of 1080 minutes and the length of 900 feet in the lower chart, find inflow rate to be approximately 11.8 gpm on the intake time curves. At the intersection of 11.8 gpm on the deep percolation curves and length of 900 feet, find deep percolation is approximately 0.15 inches. In the upper chart, find efficiency is 33 percent at the intersection of length equal to 900 feet and 11.8 gpm in the efficiency curves, and runoff is 5.95 inches at the intersection of length of 900 feet and 11.8 gpm in the runoff curves.

(b) Assume desired efficiency is 49 percent:

Eff = 49%
L = 900 feet

Find: (from Figure WA685.44.1)

Q = 5.0 gpm
RO = 2.5 inches
T_i = 1700 minutes = 28.3 hours
DP = .60 inches

(c) Assume inflow rate is 10 gpm:
Q = 10.0 gpm
L = 900 feet

Find:
T_i = 1150 minutes = 19.2 hours
DP = 0.18 inches
RO = 5.0 inches
Eff = 36.6%

Note: It appears that a maximum efficiency of 48-50% is the best that can be obtained for conditions of I_f, Fn, S, n, and L.

(2) Figure WA685.44.2 illustrates design charts which simplify the design ; cut-back inflow furrow systems. The chart is for an intake family of 0.3, ;t application depth of 3 inches, a slope of 0.004 feet per foot and n = .04.

(3) Figure WA685.44.3 illustrates design charts which simplify the design ; level furrow systems. The chart is for an intake family of 0.3 and a 3.0 ıch net application depth, and n = .04.

(FIGURES FOLLOW)

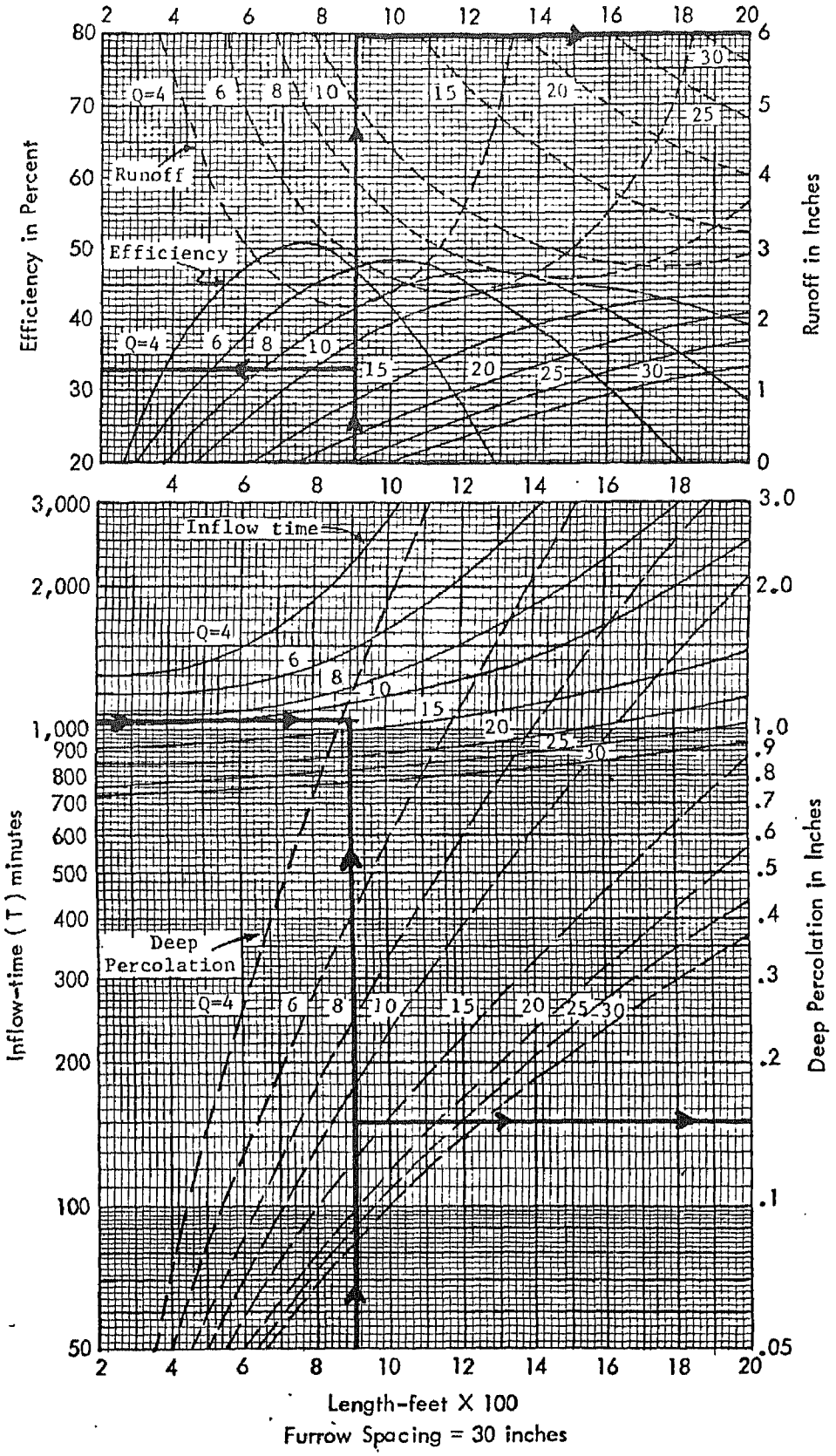


Figure WA685.44.1 - Furrow Irrigation Design Chart

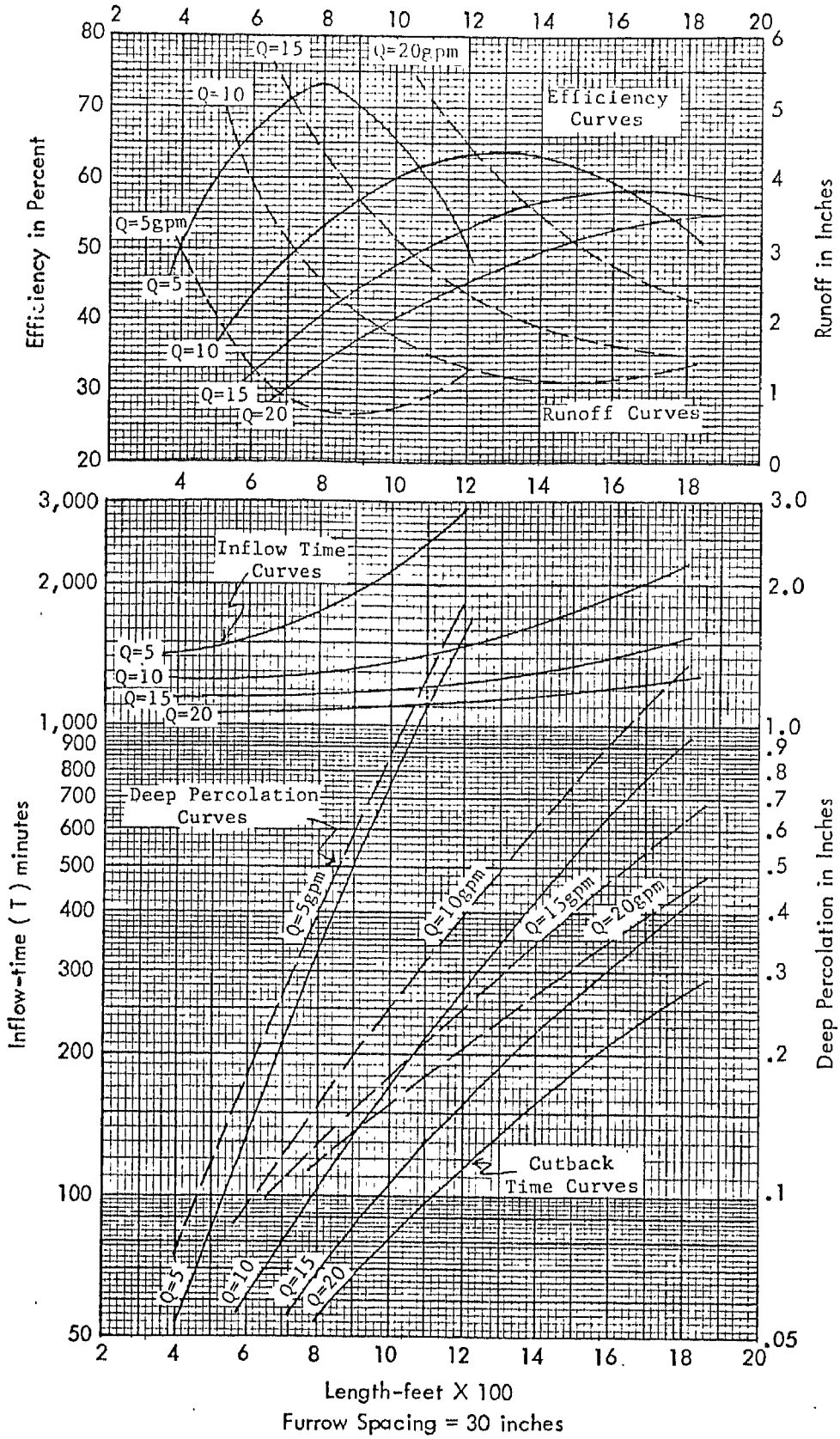


Figure WA685.44.2 - Cut-back Inflow Irrigation Design (

WA685.44.3

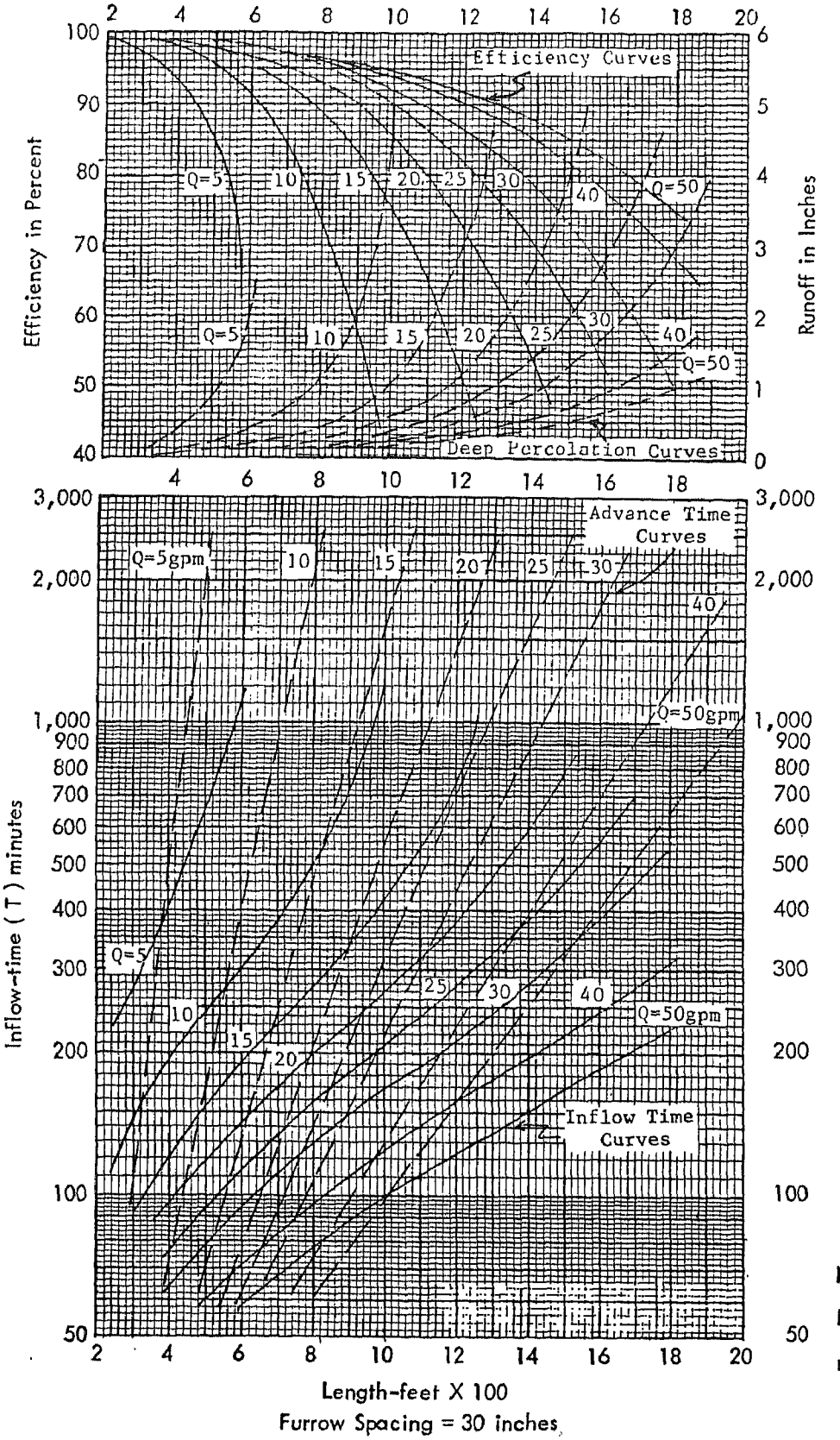


Figure WA685.44.3 - Level Furrow Irrigation Design Chart

WA685.45 Layout and considerations.

The design of an irrigation system sets the limits for the system on an individual farm or field. The design criteria will specify inflow rates for design lengths of furrows on a predetermined grade when used on a soil characterized by a given intake family. There are a number of considerations to make when selecting the design or designs to be used on an individual farm. A system layout should be based on the following items as they relate to a specific field or fields.

(a) Field grades. For efficient furrow irrigation, it is important that the irrigation layout divide the farm into fields whereby the grade in any one field meets one of the criteria given under planning considerations. That is, the grade of the entire field should be uniform or have a uniform increasing or decreasing grade. Needed land leveling to provide this degree of uniformity should be performed.

(b) Field shape. Fields of workable size and shape are important to successful irrigation farming. Unless a system is carefully laid out, some areas may not receive irrigation water, or may be virtually inaccessible and useless to the farm enterprise. Sharp turns or acute angles difficult or impossible to farm with modern farm equipment must be avoided. Fields should be as nearly rectangular in shape as possible. Furrows or corrugations in any field should be as nearly equal in length as is practical. Irrigation in adjoining fields should generally be in the same direction or at right angles to each other. Water application is normally difficult if irrigations in adjacent fields are in opposite directions. Permanent surface features such as power lines, buildings, structures, and other obstructions will influence the field shape that can be used, or the division to be made between fields. The cropping pattern to be followed will also be a determinate factor in field layout.

(c) Soil boundaries. A good soils map is essential in the layout of any irrigation system. Where soils have appreciable differences in intake rates and water holding capacities, the fields should be divided as nearly along soil boundaries as is practical and still provide uniform row lengths. The outlet end of the rows can cross a soil boundary from a slower intake rate soil to a somewhat higher intake rate soil and still permit high application efficiency. Crossing a higher intake soil onto a lower rate soil for any appreciable distance should be avoided.

(d) Field road system. The need for a field road system is frequently overlooked in laying out an irrigation system, with the result that part of the farm is inaccessible to farm machinery, the system is damaged by travel of equipment, or the roads are impassable after an irrigation or a rain. Roads should be provided above field head ditches or mains for operation of the system and below field drains. The following points should be considered in the layout of a farm road system:

WA685.45(d)(1)

(1) Ease of operating the water distribution system.

(2) Ready access to all areas of the farm for farm equipment.

(3) Transportation of farm produce from the fields.

(4) Dryness and usability of roads.

(5) Requirements for farm crossing structures.

(e) Water distribution.

(1) The on-farm water distribution portion of a furrow or corrugation irrigation system consists of all the ditches, conduits, structures and outlets necessary to deliver the water from the source of supply on the farm to the individual furrows where it is to be applied. The water distribution system should be located so that all sections will be convenient for operation and maintenance of the system. A properly designed underground pipeline requires the least maintenance and labor requirement. There are several factors to consider in the layout of the system:

(i) It should deliver the required quantity of water to each segment of the furrow or corrugation system at an elevation that permits proper operation of the system.

(ii) It should be accessible for operation and maintenance.

(iii) It should be flexible in operation.

(iv) It should not unduly obstruct farming operations.

(v) It should convey the water as economically, efficiently and safely as possible.

(vi) It should not permit excess head or water loss in transit.

(vii) It should include facilities for water measurement.

(2) When the distribution system is planned, the layout should be such that tailwater recovery can readily be incorporated into the system when such recovery systems are installed. Other potential uses, such as distribution of livestock waste on the field, should also be considered when making the system layout.

(3) Cost of the system will be a major factor in determining the kind of distribution system to use. It is also important in the system layout. The system should be planned so that the minimum amount of ditch and/or pipeline will service the entire area, and so that the minimum cost will be involved in supporting structures.

WA685.46 Cablegation

(a) Cablegation is a variation of delivering water to furrows in a steamflow cutback method with the use of a gated pipe as the application and delivery source. This is accomplished by a moving plug within the pipeline backing up a column of water and allowing water to be discharged from the gated outlets for a distance upstream of the plug. The plug is attached to a cable and allowed to move by a control release mechanism located at the pipe inlet. As the plug moves down the pipe, discharge at the most distal point from the plug ceases. The cutback method is achieved by the entrance of a large stream to the furrow adjacent to the plug, gradually diminishing to zero as the plug continues its movement down the pipe.

(b) Various design considerations are needed for cabelgation systems. Some of these are:

(1) Means must be taken into consideration of how to handle the excess water at the structure as the plug starts down the pipeline. This may be handled by:

(i) An overflow system at the structure.

(ii) Starting the plug at its outlet flow length down the pipeline.

(iii) Regulating the flow to the structure until full flow condition is reached.

(iv) Installing a plug bypass line in the cabelgation line.

(2) The size of the pipe outlets must be adequate to discharge the maximum flow to be expected for present and future crops.

(3) Provisions are needed to handle debris and sediment that may be encountered in the delivery water. Excess debris will plug the outlets and sediment deposited in the bottom of the pipeline will hang up the plug. Adequate screening and periodic flushing of the line will generally handle these problems.

(4) A uniform pipe grade is needed. Pad work may place the pipe sufficiently above field grade that will create an erosive condition. Means need to be taken into account to safely deliver the water to field grade. A split grade may be placed on the mainline, but special attention will be needed for the reel design to assure a uniform advance rate and water volume a cross the field.

WA685.46(b)(5)

(5) A selection of the cable release mechanism. Four are presently available:

(i) An electric control meter, if electricity is present.

(ii) A battery (12V DC) operated release mechanism. Security is often needed to prevent theft of the battery. Provisions are needed to recharge the battery or alternate with another battery. Commercial mechanisms now allow for approximately 30 days of battery use before recharging.

(iii) A dual hydraulic cylinder controller.

(iv) An octagon water control brake.

(6) A selection of the type of outlet. Some means is needed to reguate and conrol the discharge out of the outlets. Several commercial outlets are on the market that will function adequately. The selected outlet should:

(i) Not protrude beyond 1/4 inch into the pipeline.

(ii) Be able to be locked or fixed into position. Some slides will move when the plug passes and are not adequate.

(7) The selection of plug material and design dimensions.

(8) Selection of the cable material. Some rope products allow too much stretch, allowing for a variation in stream flow characteristics.

(c) The cablegation system is advantageous in that it is readily adaptable to several existing systems. It has a water saving ability by providing cutback irrigation and is labor saving in its automated concept.

(d) Design information is contained in "Cablegation Systems for Irrigation: Descriptions, Design, Installation and Performance", by Agricultural Research Service, ARS-21, February 1985.

FIGURE WA685.46.1 - CABLEGATION BYPASS LINE

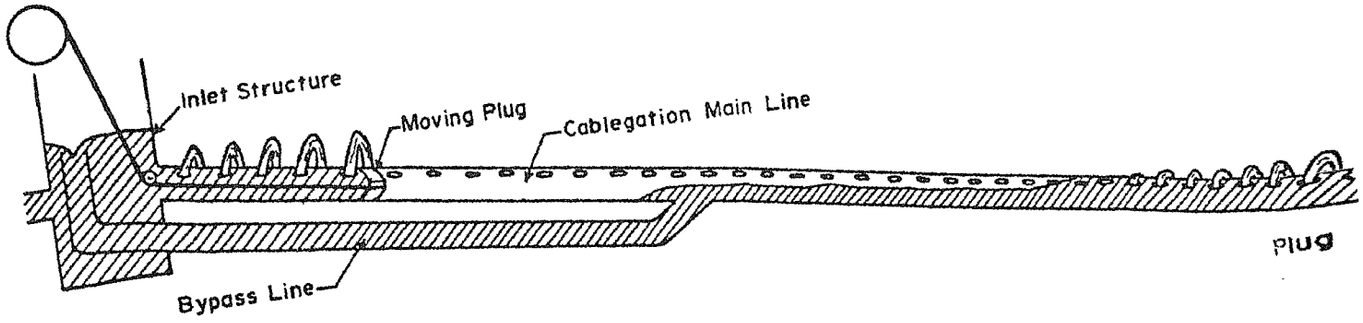
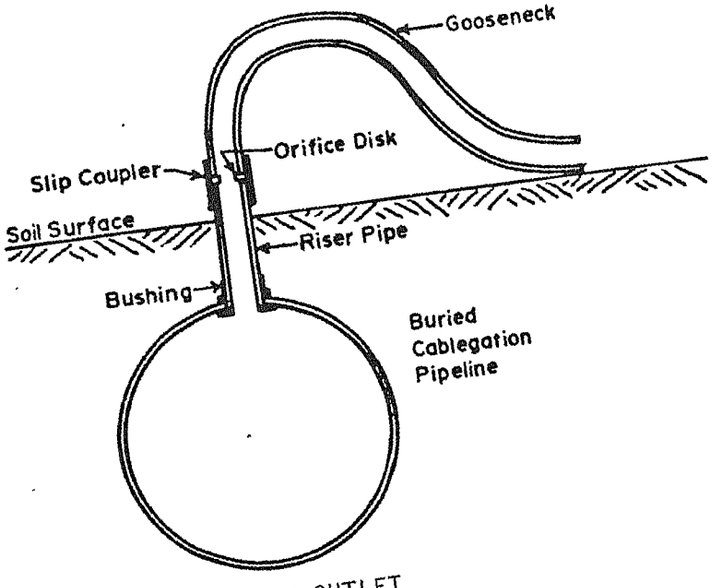
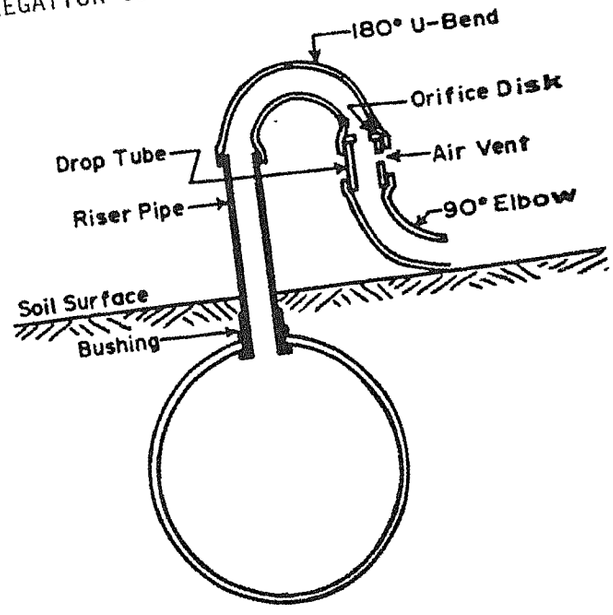


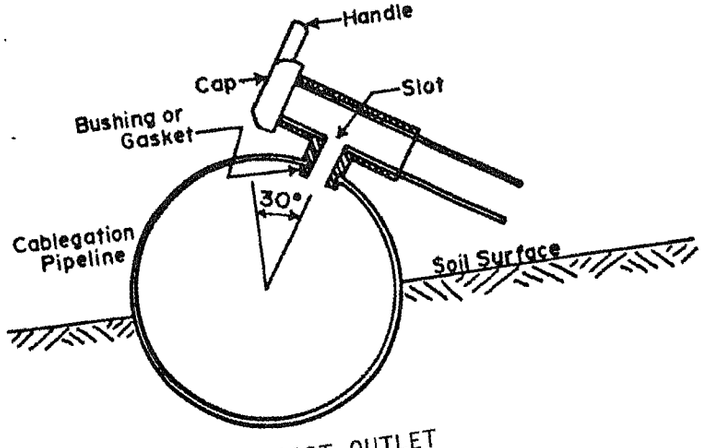
FIGURE WA685.46.2 - TYPICAL CABLEGATION OUTLETS



GOOSENECK OUTLET

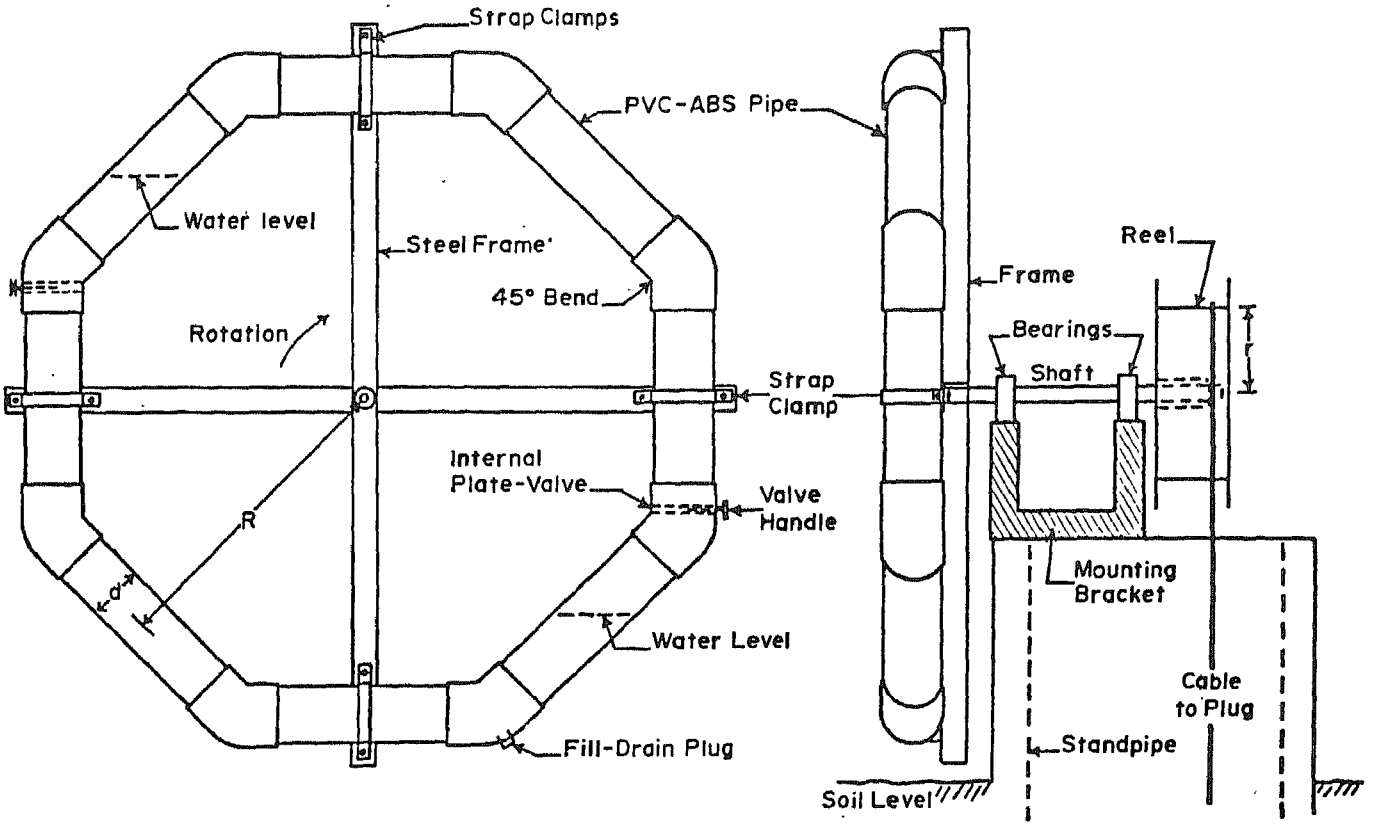


MODIFIED GOOSENECK OUTLET

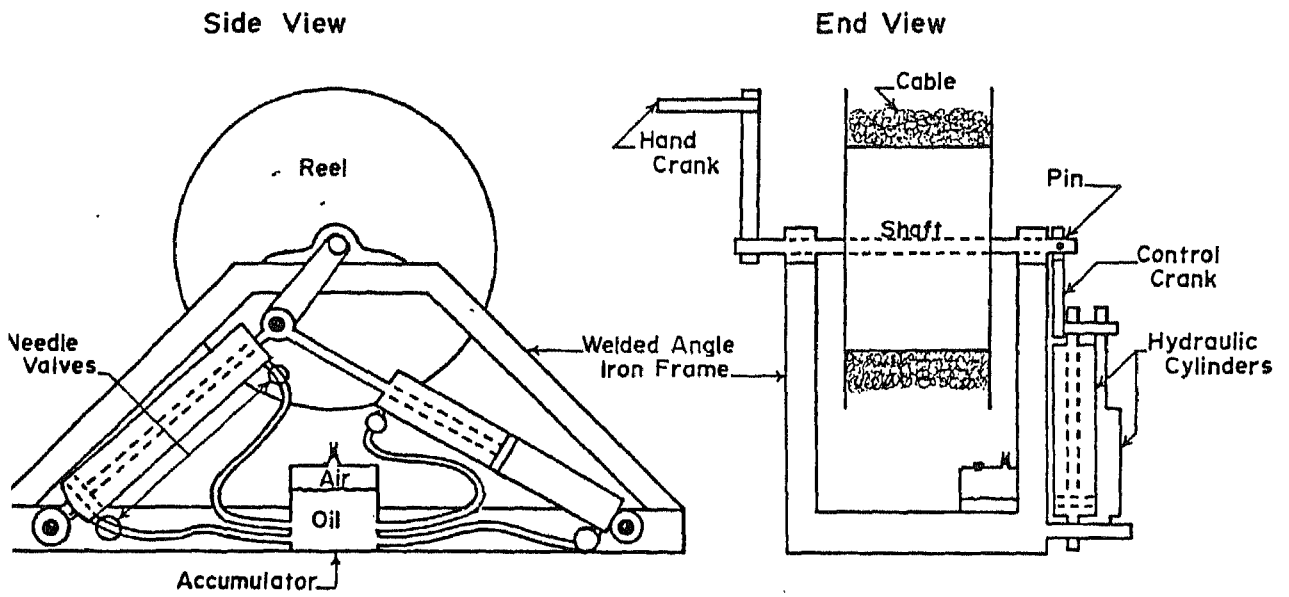


BARREL SPIGOT OUTLET

FIGURE WA685.46.3 - CABLEGATION REEL CONTROLERS



OCTAGONAL WATER BRAKE



HYDRAULIC REEL CONTROL

(WA210-VI-WAIG, OCTOBER 1985)

WA685.47 Surge Flow

(a) Surge flow irrigation is a method of intermittent application of water in a series of pulses or surges rather than the conventional continuous stream flow down a furrow. The pulses or surges are accomplished by the use of a surge valve.

(b) The surge valve controller is generally installed at the mid point in a gated pipe allowing for the switching of total water flow between sides of the valve at a predetermined cycle. There are two general types of valves:

(1) Hydraulically operated valve where the water pressure differential causes water to inflate one bladder or pillow stopper to close off one side as the bladder on the other side is collapsed to allow water flow out that side. Problems with this valve include needed periodic replacement of the rubber bladder due to wear, 5 to 6 feet of head is needed to operate the valve, and there can be as much as 12 foot of head loss through the valve.

(2) Mechanically operated valves are based upon the principle of a butterfly valve, in which a disk, or in some cases two disks, will revolve to divert water to one side or the other. A concern exists when the valve(s) close to quickly, creating a vacuum that can collapse the gated pipe on the side being shut off. Preventative measures would include air-vacuum relief valves located on both sides of the controller.

(c) The surge controller is recommended to have a timer capability of programming two half-cycle time settings, although three or more would be better. The multiple time settings allow for a reduced time of soaking after water has initially advanced to the end of the field.

(d) The soils best suited for surge irrigation are fine to medium textured soils with moderate intake rates.

(e) A common problem with surge flow is the under application of a required water volume to replace depleted soil moisture. With a known stream size a minimum time of total application cycles can be determined by:

$$T \text{ (Time)} = \frac{7.48 \times D \text{ (net replacement depth)} \times A \text{ (length x furrow width)}}{Q \text{ (furrow flow gpm)} \times \text{Efficiency}}$$

Due to the reduced deep percolation and runoff possibilities, efficiencies of 80% are easily obtained with properly designed and cycled surge flow systems.

WA685.47(f)

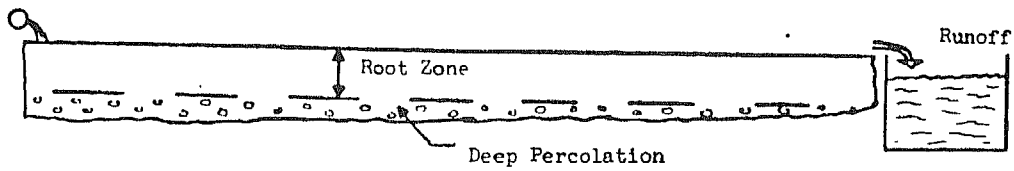
(f) Initial advances per surge irrigation should not advance more than 25% of the furrow length for the first surge. Longer advances tend to defeat the principles of surge flow by allowing high deep percolation losses. Once the total flow length has been wetted by a series of advances, the surge time is generally cut back by a third to a half for further surges needed to supply the desired depth. If the surge valve does not have this automatic capability, it is often shut off to allow for half volume flows to be discharged out both sides to finish the application time.

(g) Surge irrigation works best on ground that has a uniform slope down and across the furrow.

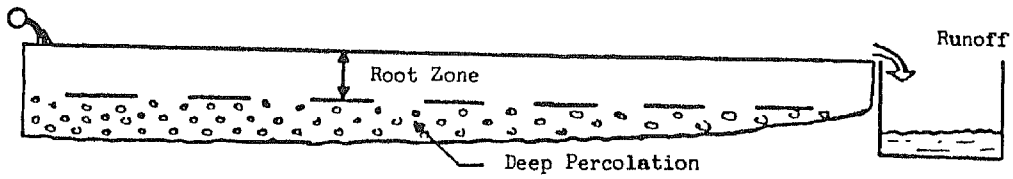
(h) At the present time, no comprehensive design manual exists for surge flow. This process of irrigation is still under refinement and research; however, has shown good results where applied in the southwest.

FIGURE WA685.47.1 - SURGE FLOW APPLICATION AND RESULTS

A. Large Furrow Stream - excess runoff



B. Small Furrow Stream - excess deep percolation



C. Large Initial Furrow Stream, Small Cut-back Furrow Stream

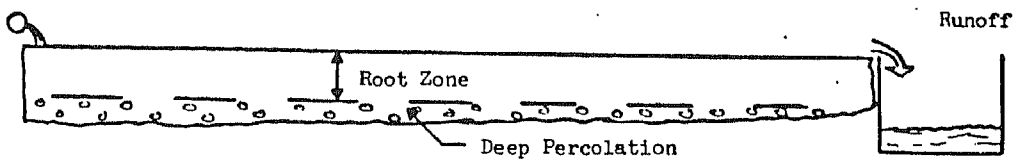
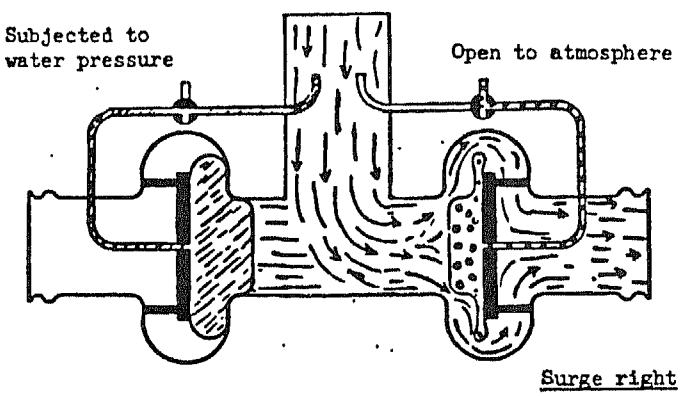
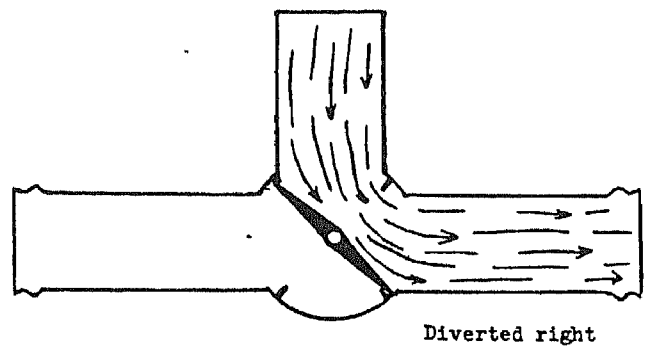
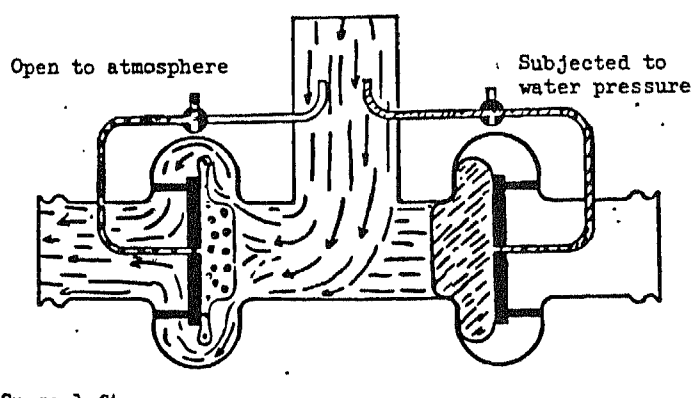
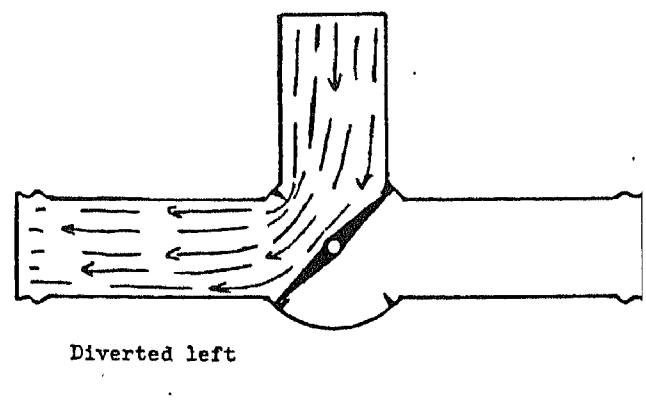


FIGURE WA685.47.1 - SURGE FLOW CONTROL VALVES









WATER OPERATED BLADDER VALVE

"BUTTERFLY" TYPE MECHANICAL VALVE

SUBPART E - HAND-MOVE LATERAL SPRINKLERS (PORTABLE)

WA685.51(a)

WA685.50 Description.

(a) Equipment and techniques for the application of water by the sprinkle method are so varied that it is impractical to give specific data in an irrigation guide for each type of sprinkle system.

(b) The following discussion is aimed at giving guidelines for the selection of the type of equipment best suited, and design considerations and requirements that the selected equipment should meet.

(c) In sprinkle irrigation, the water is sprayed into the air and allowed to fall on the land surface in a uniform pattern at a rate approximately equal to, or less than, the intake rate of the soil. This method of water application is similar to rainfall.

(d) If the system is properly designed and operated, efficiencies of 65 percent to 75 percent can be obtained. Sprinkler losses are due to evaporation losses in the air by the sprinkler spray, evaporation from the soil surface, evaporation of moisture intercepted on the leaves during irrigation and nonuniform distribution due to sprinkler pattern. Wind also distorts the pattern and frequently results in nonuniform application and efficiencies considerably lower than given above.

(e) Intake rates under sprinkler irrigation do not conform to those for flood or furrow. Tables in Part WA681 Soils, have been prepared as a guide for maximum application rates. A sprinkle system that will apply water, at a rate equal to or less than shown in the table, will be satisfactory to use in applying irrigation water.

WA685.51 Type of sprinklers.

Sprinklers spray the water onto the land through nozzles in the sprinkler heads. These are classified according to the pressure required for proper distribution of the water applied.

(a) Low pressure - revolving sprinklers. They operate at 5 to 15 psi with a wetted diameter of 20 to 50 feet, and a recommended minimum application rate of 0.2 to 0.4 inch per hour. These sprinklers are adapted to small acreage and where gravity pressure can be utilized, but suggested for soils with intake rates exceeding 0.40 inch per hour.

WA685.51(b)

(b) Moderate pressure - revolving sprinklers. They are usually single-nozzle sprinklers with an operating pressure of from 15 to 30 psi with a wetted diameter of 60 to 80 feet, and a minimum application rate of 0.20 inch per hour. These sprinklers are adapted primarily to under-tree sprinkling in orchards, or gravity pressurized systems to most other crops.

(c) Intermediate pressure - revolving sprinklers. They may be either single or dual-nozzle design with operating pressures of 30 to 60 psi and a wetted diameter of 75 to 125 feet, and a minimum application rate of 0.25 inch per hour. These sprinklers are probably the most popular because they can be adapted to a wide variety of soils and crops.

(d) High pressure - revolving sprinklers. They may be either single- or dual-nozzle design with operating pressures of 50 to 100 psi and a wetted diameter of 110 to 230 feet, and a minimum application rate of 0.50 inch per hour. Sprinklers of this type are primarily adapted to truck crops, field crops, and pastures in areas where wind distortion of the pattern is not excessive. They provide fast coverage with limited equipment.

(e) Hydraulic or giant - revolving sprinklers. These types of sprinklers have a large nozzle with smaller supplemental nozzle to fill in pattern gaps. They operate at pressures of 80 to 120 psi and a wetted diameter from 200 to 400 feet, and a minimum application rate of 0.65 inch per hour. These sprinklers are primarily adapted to irrigation of pastures and tall-growing crops, and where rapid coverage is desired or acceptable. They are limited to soils with high intake rates and soils not subject to compaction.

(f) Under-Tree, low-angle - revolving sprinklers. These sprinklers are designed to keep stream trajectories below fruit and tree foliage by lowering the nozzle angle. They operate from 10 to 50 psi with a wetted diameter of 30 to 65 feet, with low application rates. They are adapted to orchards where the irrigation spray from other types will damage fruits, special soft fruits, or where winds or tree foliage interfere and distort over or through the tree sprinklers, and where available or operating pressure is low.

(g) Low pressure - fixed-spray sprinklers. They operate at 20 to 45 psi. These sprinklers are used in conjunction with center pivot-type sprinkler systems. The gross application rate within the system is controlled by the spray nozzle spacing and spray nozzle size. Some nozzles spray only a partial circle, so that ideally rotation equipment of the center pivot sprinkler system travel across relatively dry ground. The maximum application rates range from 3.0 inches per hour to greater than 6.0 inches per hour for partial ciracle nozzles.

(h) Perforated pipe sprinklers. Water is sprayed out of small pinholes closely spaced along the upper part of the portable irrigation pipe lateral. Usually, several rows of perforations are used so that the jet of water covers a rectangular strip 10 to 50 feet wide. They can operate on pressures of 4 to 20 psi. The recommended minimum application rate of 0.50 inch per hour. They are adapted for low-growing crops on soils of relatively high intake rates.

WA685.52 Type of stream.

(a) All sprinkle irrigation systems use a series of one or more of the above types of sprinklers to apply the water. Water is conveyed to these sprinklers through either stationary or movable pipelines.

(b) The hand-move lateral sprinkler is a portable lateral pipeline mounted with sprinklers set at one location until the desired irrigation is obtained. The lateral pipeline is then disassembled and moved by hand from this location to another location and the operation repeated. The system is, therefore, a set-type system. Quick-coupled aluminum is the best for most portable laterals. This is generally the cheapest type of system. However, considerable labor is required for moving the portable pipe.

WA685.53 Adaptations and Limitations.

Hand lines can be used on irregularly-shaped fields and rolling terrain. They can use most revolving sprinklers from low to high-pressure and can meet most soil intake limitations. They are inconvenient for tall crops. This type of system is labor intensive.

WA685.54 Design concepts.

(a) Sprinkler systems that operate in sets require the moving of the laterals at specific intervals of time. In order to fit in with farm schedules, it is generally recommended that the time of sets be planned for 7-hour, 11-hour, or 23-hour periods of time, which allows one hour per set for moving the lines and servicing the equipment.

(b) Tables have been prepared to provide design guidance. The tables, along with the following criteria, will aid in determining the feasibility of portable sprinklers:

(1) The allowable variation in lateral line pressure should not exceed plus or minus 10 percent of the design pressure when friction loss and elevation are considered.

(2) For selection of most economical sizes, the friction loss in the mainline should not generally exceed 20 to 30 percent of the pressure at the pump. Final selection should be based on economics, including energy use.

(3) With hand-moved systems, alternate lines should be staggered to give best application distribution. Set-type systems should be spaced along the mainline as set forth in SCS Practice Standard, Irrigation System Sprinkler 442.

WA685.54.1

Net Depth of Water Applied per Irrigation	Average Wind Movement 0-5 MPH	5-10 MPH	10-15 MPH
Under 2.0"	65%	60%	55%
More than 2.0"	70%	65%	60%

NOTE: Use efficiencies 5% higher than shown for areas where peak consumptive use rates are less than 0.20 inches per day and for under-tree irrigation in all areas.

Table WA685.54.1-Recommended Design Efficiencies Sprinkler

WA685.55 Design Procedure

(a) The following presents an example of how to use this Guide in the design of a sprinkler system. Detailed procedure is contained in NEH-15, Chapter 11, Sprinkler Irrigation.

(b) Example - Design hand-move sprinkler irrigation system

(1) Select a sprinkle system to meet the following design requirements, and record the data on WA-ENG-24, Irrigation Design.

(2) Computations - Sprinkle design computations

Given: Location: Cle Elum
Field Shape: 1320 feet east to west
2640 feet north to south
Elevations: Lateral 10' full mainline 0' change
Layout: Figure WA685.55.E2
Soil: Cle Elum Loam
Crop: Grass Hay
Water Source: Yakima River
Water Right: 900 gpm
Owners Desire: 2 moves/day (11 hr sets)
60 foot lateral spacing
40 foot nozzle spacing
Locate mainline north/south on the west
Hand-move system
PVC mainline (buried)

Required: Adequate system design

Solution: Resource data (record on WA-ENG-24)
Appendix A (Soil Tables) determine soil parameters

Cle Elum L - Management Group 14 (Appendix A)
Soil Depth - 3 feet
Total WHC = 12 x .19 + 12 x .18 + 12 x .18 = 6.60 inches
Intake Rate = 0.35 IPH
CEI = 5.12
Management group note is to make sure application rate is less than 0.35 IPH

Crop Data

Crop is - Grass Hay (same as grass pasture)
Moisture extraction depth = 3 feet (Table WA682.50)
Peak month consumptive use = 6.50 inches (Appendix B)

WA685.55(b)(2)

Design Data:

(I) Check crop depth against soil depth they are equal at 3 feet so TWC = 6.60 inches

(II) Determine allowable depletion
50% (Table WA682.50)
Allowable depletion = 6.60 x 0.50 = 3.30 inches

(III) Determine peak daily crop use
(Table WA683.51.1) Net application = 3.3, Month CU = 6.50
Peak daily CU = 0.23 inches

(IV) Check allowable irrigation frequency
$\text{Frequency} = \frac{\text{Net Applic.}}{\text{CU}} = \frac{3.3}{0.23} = 14 \text{ days}$

(V) Determine design efficiency (Table WA685.54.1)
Average wind speed = 5-10 mph
Greater than 2" Application
Eff = 65%

(VI) Determine net and gross application rate
$\text{Net Applic Rate} = \frac{\text{Net Application}}{\text{Time of Applic.}} = \frac{3.3(\text{in})}{11 \text{ (hr)}} = 0.30 \text{ IPH}$
$\text{Gross Applic Rate} = \frac{\text{Net Applic Rate}}{\text{Eff.}} = \frac{0.30}{0.65} = 0.46 \text{ IPH}$

(VII) Check that the application rate is less than the soil intake rate
0.46 ? 0.35 The application rate exceeds the intake

*Note: If the application rate is acceptable, skip to Step X.

(VIII) Check application rate with 1 set (23 HR) per day.
$\text{Net Applic Rate} = \frac{3.3(\text{in})}{23 \text{ (HR)}} = 0.14 \text{ IPH}$
$\text{Gross Applic Rate} = \frac{0.14}{0.65} = 0.22 \text{ IPH}$

(IX Check application rate against soil intake rate.
0.22 ? 0.35 Yes Okay with 1 set/day
*Note: If the application rate still exceeds the intake rate, a reduced total application is needed. Reduce the days between irrigations by the percentage difference between the allowable intake and gross application to find a new net application needed, then repeat from Step III. (i.e., Step VII, $\frac{0.35}{0.46} = 0.76$, 14 days x .76 = 10.6 days,
Use 11 days, 11 days x 0.23 = 2.53 inches, (Step III) check Table WA683.51.1 (CU = 0.24"/day which is approximately 0.23"/day so continue with 11 day sets.)

(X) Use one of the following procedures to select the nozzle needed to supply 0.22 IPH gross application (Step VIII).

a. Nozzle gpm = $\frac{\text{Gross Applic Rate (IPH) x Nozzle area (ft}^2\text{)}}{96.3}$

$= \frac{0.22 \times (40 \times 60)}{96.3} = 5.5$ gpm

Check manufacturers references and select applicable nozzle. Rainbird 30 BW-TNT (or equivalent) 11/64" at 42 psi (or Table 685.74.4)

Or

b. Use manufacturers slide rule and set gross application rate under desired spacing (i.e., 40 x 60)
Read sprinkler gpm = 5.5 gpm and 11/64" at 42 psi

(XI) Check to see if the nozzle will provide the wetted diameter to meet National Practice Standard 442 criteria. (Same criteria on bottom of WA-ENG-24).

Diameter of 11/64" nozzle at 42 psi = 92 feet (mfg. literature)
Winds 5-10 Spacing on lateral = 0.5 dia.
Spacing on mainline = 0.5 to 0.6 dia.
Allowable spacing on the lateral = 0.5 x 92 = 46 feet
Allowable spacing on the mainline = 46-55 feet

Conclusion: A 40 x 60 spacing will not provide adequate distribution, a 40 x 50 would be needed.

*Note: If the diameter checks out skip to Step XIII.

(XII) Find proper nozzle for 40 x 50 spacing - Repeat from Step X.

a. Nozzle gpm = $\frac{0.22 \times (40 \times 50)}{96.3} = 4.6$ gpm

Rainbird (or equivalent) 5/32" @ 43 psi = 4.6 gpm

b. Dia = 88 feet
Allowable spacing lateral = 44 feet
Allowable spacing on main = 50 feet @ 0.57 Dia.

Conclusion: 5/32" nozzle @ 43 psi and 4.6 gpm will function with good uniformity on a 40 x 50 spacing.

WA685.55(b)(2)

(XIII) Find the number of nozzles on the lateral

$$\text{Number of Nozzles} = \frac{\text{Lateral Length}}{\text{Nozzel Spacing}} = \frac{1320}{40}$$

= 33 nozzles (Note: nozzles are always rounded up if there is a decimal.)

(XIV) Find number of laterals required

$$\text{Number of Laterals} = \frac{\text{(Mainline Length to be covered-ft)}}{\text{(Mainline Spacing-ft)(Moves/day)(day frequency)}}$$

$$= \frac{2640 \text{ ft}}{(50 \text{ ft})(1)(14 \text{ days})} = 3.77 \text{ laterals}$$

4 laterals would be required, 3 would be used for 14 days with each one covering 700 feet. The fourth would cover 11 sets or be used 11 days. The field could be covered in approximately 13 days with all working.

(XV) Find number of risers

$$\text{Risers} = \frac{\text{Mainline length} - (1/2 \text{ Riser spacing} \times 2) + 1}{\text{Riser Spacing}}$$

$$= \frac{2640 - (25 \times 2)}{50} + 1 = 52.8 = 53 \text{ Risers}$$

Note: 2640 is a total length and the wetted diameter is 50 feet so the laterals would need to be set into the field 1/2 of nozzle diameter.

(XVI) Find maximum system water needs

Qgpm = 4 laterals x 33 nozzles/lateral x 4.6 gpm/nozzle
= 607 gpm

System gpm is less than available

Lateral Design

Minimum elevation difference from the mainline to the end of the lateral is a 10 foot elevation drop. The combined pressure loss and elevation charge in the lateral should not be greater than 20% of the nozzle operating pressure. If the 20% is exceeded, a change in lateral pipe size, flow regulators, or pressure regulators will be needed.

(I) Determine flow in the lateral

Qgpm Lateral = Number nozzles x gpm/nozzle
= 33 x 4.6 = 151.8 use 152 gpm

(II) Select lateral material and diameter

Diameter = 4 inch
Material, aluminum

(III) Compute friction loss
Page 11-50 & 11-51, NEH-15, Chapter 11 or manufacturers slide rule.
Friction Loss = 3.6 psi x 2.31 ft/psi = 8.32 feet

(IV) Compute total pressure loss in lateral
Pressure loss = lateral friction loss $\pm$ elevation
Pressure loss = 8.32 - 10 (elev. full) = -1.68 ft.

Check 20% variation - Nozzle pressure = 43 psi x 2.31 = 99.33 ft.
Allowable variation = 99.33 x .2 = 19.9 ft.
-1.68 ft <? 19.9 ft. okay

*Note: Since lateral loss is < 0 it will be set to 0 in all future calculation needs. A 3" line could have been used but 4" gives an even balance of pressure and gpm at head and tail end.

Mainline Design

Design the mainline size from the pump either north or south from the pump since conditions are equivalent on both sides and there is no elevation change.

Design so that two of the laterals are at their outmost position on the mainline.

(I) Find actual mainline length to evaluate
Field length = 2640 feet
Pump is in the center so length to edge of field = 1320 feet
First riser 25' in from edge of field
Length from pump to end = 1320 -25 = 1295 ft. use 1300'

(II) Find lateral locations
One lateral covers 700' so place 700' out from pump, 2nd lateral assumed to be at the end = 1300'

(III) Determine Qgpm through each section
Pump to 7+00 two lines @ 152 gpm each
Q_{7+00} = 304 gpm
From 7+00 to 13+00 one line Q_{13+00} = 152 gpm

(IV) Determine mainline material, find size material, PVC (IPS), SDR32.5
Material - PVC (IPS), SDR 32.5 (125 psi)
For initial sizing limit velocity to 5 fps

$$A = \frac{Q}{V},\quad A = \frac{\pi d^2}{4},\quad D_{(in)} = 12\sqrt{\frac{Q}{V \times 450} \times \frac{4}{\pi}}$$

for V = 5 fps $(D_{(in)}) = (0.286)\ (\sqrt{Qgpm})$
Pump to 7+00 Qgpm = 304 $D_{(in)}$ = 4.99 inches
7+00 to 13+00 Qgpm = 152 $D_{(in)}$ = 3.53 inches

Note: Friction loss and velocity tables can be found in Part WA691.

WA685.55(b)(2)

Select: 6 inch from pump to 7+50 and 4 inch from 7+50 to 13+00
(5" could have been used but not locally available)

(V) Check actual pipe velocities and determine friction losses.

$$V = \frac{40 \times 144}{D(in)^2}$$ where Q = cfs; 1 cfs = 450 gpm

$$V = \frac{40 \times 144}{450\ D(in)^2} = \frac{0.407\ Q(gpm)}{D(in)^2}$$

Actual inside dia of 6" 125 psi = 6.217
Actual inside dia of 4" 125 psi = 4.224

$$V_{6"} = \frac{(0.407)(304)}{(6.217)^2} = 3.2 \text{ fps}$$

$$V_{4"} = \frac{(0.407)(152)}{(4.224)^2} = 3.5 \text{ fps}$$

Using Equation (PVC)

$$f1 = 0.0426 \times Q^{1.85}/Di^{4.87}$$

or using friction loss tables
f1 pump to 7+00 = 0.23 psi/100 x 7.0 = 1.61 psi
f1 7+00 to 13+00 = 0.40 psi/100 x 6.0 = 2.40 psi

(VI) Verify all data is recorded on WA-ENG-24 and compute the estimated horsepower requirements.

*Note: Miscellaneous losses should be less than 10% of the nozzle operating pressure.

Exhibit WA685.55.E1 - Sprinkler Irrigation System Design

U. S. Department of Agriculture
Soil Conservation Service

WA-ENG-24
8/77
File Code ENG-19

IRRIGATION DESIGN

Owner IRRIGATION GUIDE EXAMPLE Date 2/31/00
Location Cle Elum Acres 80
Resource Inventory:

Soils; Cle Elum Loam
Water holding capacity, --- in/ft.
Soil Depth, 3 ft.
Total available water, 6.60 inches
Maximum soil intake rate. 0.35 in/hour

Crops; Grass Pasture
Moisture extraction depth, 3 ft.
Net Moisture to be applied, 3.30 in/irrigation
Peak period use rate, 0.23 in/day
Maximum allowable irrigation frequency, 14 days

Water Supply;
Source, Yakima River (I.D., Co., well, etc.)
Amount available, 900 gpm

Sprinkler Design:
Application efficiency, 65%
Gross application per irrigation, 5.06 inches
Sprinkler setting, 23 hr.
Sprinkler;
Application rate, 0.22 in/hour (≤ soil intake rate)
Spacing, 40 ft. on lateral; 50 ft. on mainline
Discharge, 4.6 gpm/sprinkler
Nozzle Size, 5/32 inches by --- inch
Nozzle Pressure, 43 psi x 2.31 = 99.3 ft.
Wetted Sprinkler Diameter, 88 ft.

Note: Sprinkler spacing on laterals and mainline should not exceed the following spacing of the wetted sprinkler diameter.

Average Wind Velocity	Laterals	Mainline
Less than 5 MPH	0.5 Dia.	0.65 Dia.
5 MPH	0.5 Dia.	0.60 Dia.
10 MPH	0.5 Dia.	0.50 Dia.
Greater than 10 MPH	0.5 Dia.	0.30 Dia.

WA685.55.E1

Exhibit WA685.55.E1 Sprinkler Irrigation System Design (Continued)

Lateral Design:

Lateral length, 1320 ft. (average, (typical), or maximum)
Sprinkler per lateral, 33 (average, (typical), or maximum)
Acres irrigated per lateral per day, --- acres (average, typical, or maximum)
Laterals required, 4
Irrigation design frequency, 14 days(≤ maximum allowable irrigation frequency)
Total water requirements, 607 gpm (< amount available)
Laterals;
Material, Aluminum Pressure Rating, ---

Q GPM	Dia. in.	Length ft.		h_f psi/100'		h_f ft.		Elev. ft.	=	Pressure Loss, ft.
152	4	1320	x	3.6	x 2.31 =	8.3	+	- 10	=	-1.7
			x		x 2.31 =		+		=	

Total pressure loss in lateral = -1.7 ft.

Note: Allowable pressure loss in the lateral should not exceed 20% of the operating pressure of the lateral.

Mainline Design:

Material, PVC (SDR 32.5) ; Length, 2600 ft.

Q GPM	Dia. in.	Length ft.		h_f psi/100'		h_f ft.		Elev. ft.	=	Pressure Loss, ft.
304	6	700	x	0.23	x 2.31 =	3.2	+	0	=	3.2
152	4	600	x	0.40	x 2.31 =	5.5	+	0	=	5.5
			x		x 2.31 =		+		=	

Total pressure loss in mainline = 8.7 ft.

Note: For economical mainline design, the total pressure loss in the mainline should be between 5 and 15% of the total pumping head.

Pumping Requirements:

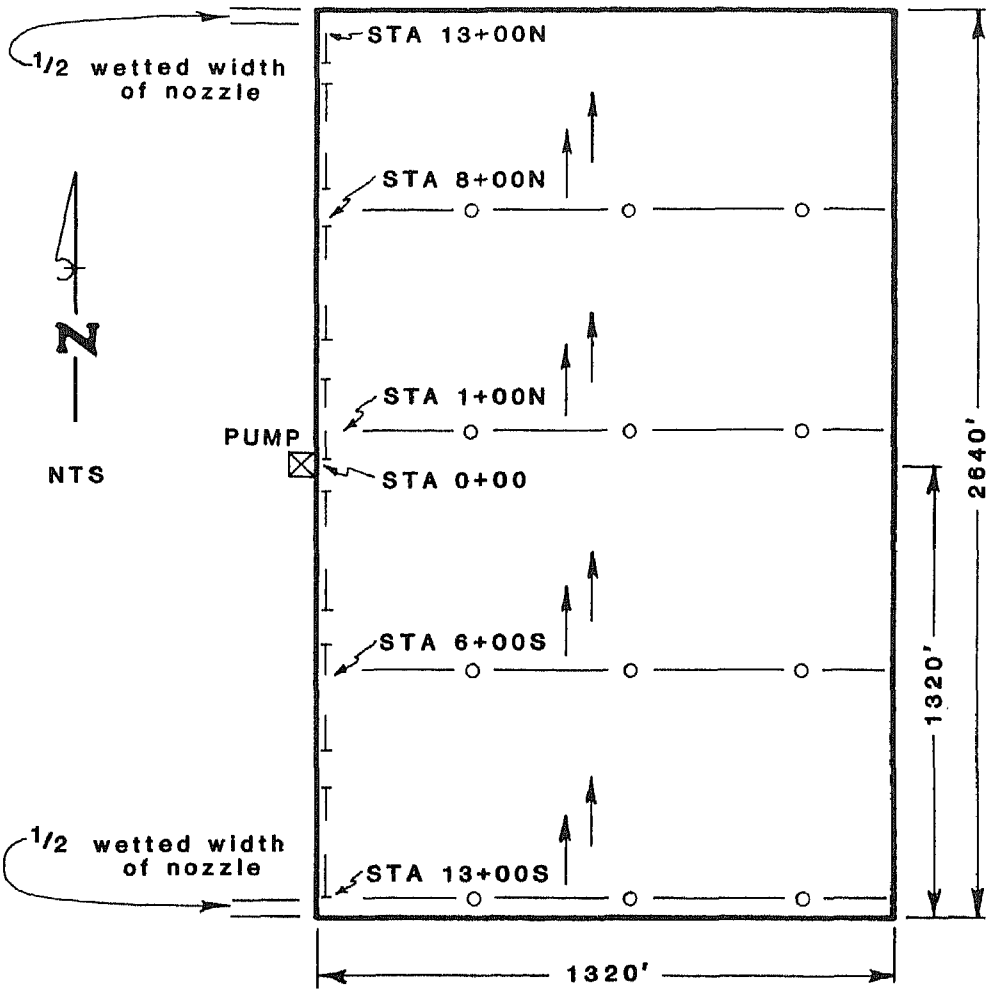
Sprinkler discharge pressure, 99.3 ft.
Pressure loss in lateral, 0 ft. (Negative values not used here.)
Pressure loss in mainline, 8.7 ft.
Pumping suction head, 5 ft.
Miscellaneous friction loss, 9.9 ft. (Used 10% of nozzle pressure.)
Total dynamic head, TDH = 122.9 ft.
Estimated horsepower; HP;

$$HP = \frac{(607 \text{ gpm})\ (122.9 \text{ ft.})}{(3960)\ (0.70 \text{ Efficiency})} = 27 \text{ HP}$$

Centrifical pump assumed at 70%

WA685.55.E2

Figure WA685.55.E2 - Typical Layout



The suggested physical layout would vary slightly from a design layout for worst condition. With this layout the north line would be off for four days to allow for moving and energy savings. Use of a booster would be needed during operation of all four lines but could be shut off for four days during non need.

WA685.56 Design charts.

Design charts, tables, and graphs are available to aid in the design and selection of components of the system. These may be found in Engineering Field Manual, Chapters 3 and 15 and NEH Section 15, Chapter 1, 3, 8, and 11. Industry has also prepared charts, tables, etc., for use in this process.

WA685.57 Layout considerations.

(a) Figure WA685.57.1 shows the general layout and operation of typical set-type distribution systems, one of which is the hand-moved system. It shows the water source in the center of the field; although, it could be at another point with the mainline located through the center of the field. The main supply line (mainline) could be either portable or buried. Mainline valves can be at every lateral line location, or less can be used with flexible hose or portable pipeline interconnecting lateral lines to the mainline.

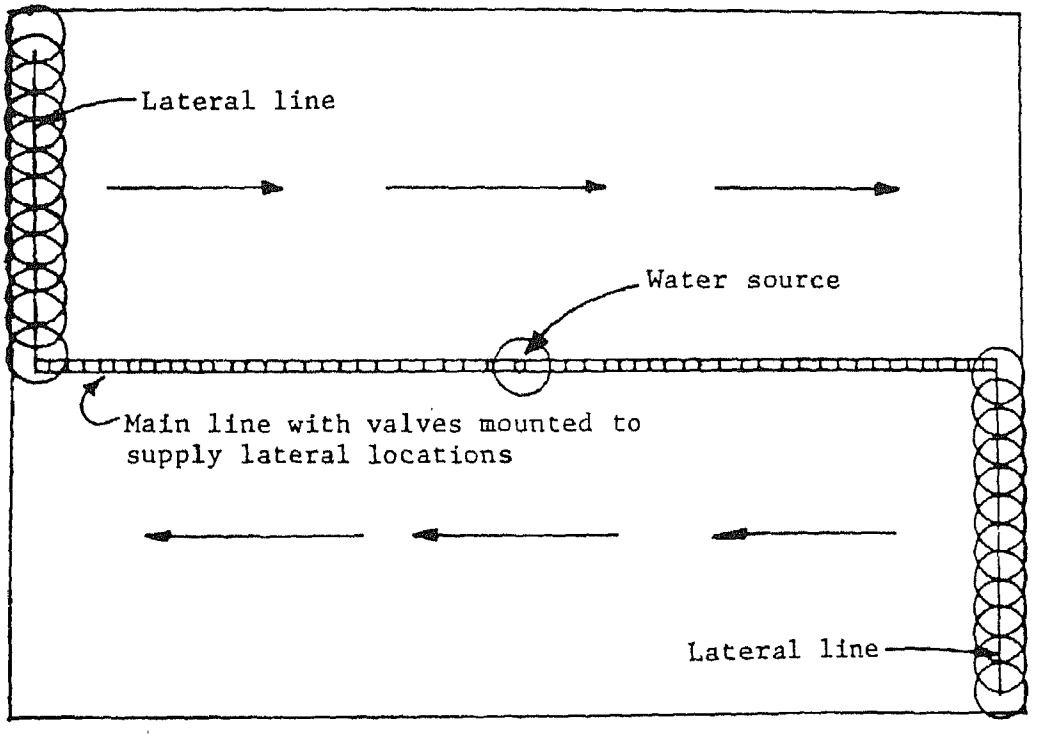


Figure WA685.57.1 - Set-Type Irrigation Systems

WA685.57(b)

(b) When a lateral line reaches the end of the field, it is disassembled and either moved back to its original location, or across the mainline to the original location of the other lateral lines. Lateral lines must be moved along a mainline in sequence and hence back to the starting location of that lateral or of another, so that the starting location area which was sprinkle irrigated first will again be sprinkle irrigated first in the next cycle.

(c) Generally, to keep the labor costs as low as possible, the design should be such that the required irrigation is applied in either 7, 11, or 23 hours time of sets to allow either three, two or one lateral moves per day for each lateral line, with an hour allowed to move a lateral line from one location to another. The seven-hour time of set can be an unpopular set time for two reasons:

(1) The pipeline diameter needed to convey the water in systems with either large sprinkler spacing and/or long lines can become large and not easily-handled and moved by a person, or. . .

(2) A move to a new location might come at night and might not be desirable to the owner or operator, but this choice should be reviewed with the operator.

SUBPART F - MECHANICAL-MOVE LATERAL SPRINKLERS (SIDEWHEEL-ROLL, SIDE-MOVE)

WA685.60 Description.

Refer to Subpart E, paragraphs WA685.50 and WA685.51 for general discussion which also applies to these systems.

WA685.61 Types of systems.

(a) The sideroll system was developed to decrease the amount and intensity of labor required, the lateral line is mounted on wheels. The lateral line pipe is the axle with the wheels usually spaced 40 feet apart and the sprinklers mounted midway between the wheels. The wheels are available in different diameters, with the largest wheels used for maximum crop clearance.

(b) The operation of the sidewheel-roll lateral is similar to the hand-move system. The lateral line is moved between lateral set locations by rolling the wheels. The distance between lateral set locations depends on the size of the sprinklers. Usually, this distance will be between 50 and 60 feet. The connection of the lateral to the mainline is done in a similar manner as in the hand-move system by means of a flexible rubber hose or portable pipeline.

(c) When the sidewheel-roll system was first introduced, a large lever with a ratchet was used to move the system from one set to the next. Today, most of the sidewheel-roll systems use air-cooled gasoline engines located near the center of the line to move the system. Because the pipe twists somewhat, it is necessary to provide for vertical alignment of the sprinklers. Two ways to provide vertical alignment of the sprinklers are as follows:

(1) The self-aligning riser is a goose neck device with a counterweight to keep the sprinkler vertical, or. . .

(2) If the lateral line is over-rolled slightly past a lateral set location so that the end sprinklers are vertical, then reverse the power mover to take the twist out of the pipe. This will leave the sprinklers vertical. This is a second-best method, but it does work.

(d) For a greater coverage per lateral set location, some sidewheel-roll systems have been developed which use trailing sprinkler lines, each containing three or four sprinklers. these sprinklers, in addition to the sprinklers located on the main lateral, provide for set location widths up to 240 feet wide. The field operation is the same as for hand-move or the conventional sidewheel-roll system, except the width per lateral set is considerably greater.

WA685.62(a)

WA685.62 Advantages and limitations

(a) The sidewheel-roll system best fits a rectangular field. However, with quick coupler sections now available, it can be added to or dropped off, as required, to fit irregularly-shaped fields. It can be used to some degree on rolling terrain. Except when mounted on tower assemblies, these systems are not adaptable to tall crops. They can be used on most soils suitable for sprinkler irrigation. Alignment may be difficult on undulating topography. Care must be taken to insure that high winds will not roll the system cross-country and damage it.

(b) As with the hand-move lateral sprinkler, it can use most revolving sprinklers from low-pressure to high-pressure and can meet most soil intake limitations.

WA685.63 Design concepts.

Refer to Subpart E, paragraph WA685.54.

WA685.84 Design procedure.

(a) Refer to Subpart E, paragraph WA685.55.

(b) In addition to this section, lateral design is more complex on systems with trailing sprinkler lines. Particularly in determining the friction losses, since the actual volumes are greater than on a single sprinkler discharge line, which in turn will require larger diameter main lateral line.

WA685.65 Design charts.

Refer to Subpart E, paragraph WA685.56.

WA685.66 Layout considerations.

(a) The layout of a sidewheel-roll system can be very similar to the hand-move lateral systems. See Figure WA685.66.1 for the typical layout of a sidewheel-roll lateral sprinkler system. When a lateral reaches the end of a field, it is either moved back to its starting point or to an adjacent field. Setting on alternate outlets while going across the field and then setting on the missed outlets when going back across the field eliminates moving across the entire field just to start over.

(b) In the case of trailing systems, this subpart must be picked up and transported separately. Provisions can be made to transport the trailing lines on the main lateral line, if not already provided by the manufacturer. The main lateral lines used with a trailing system often have the main lateral line support on some type of tower assemblies to provide clearance for tall crops.

(c) The sidewheel-roll systems should be such that the required irrigation is applied in either 7, 11, or 23 hours time to allow three, two or one lateral moves per day for each lateral line, with an hour allowed to move a lateral line from one location to another. Here, again, as with hand-move systems, the seven-hour time of set can be an unpopular set time because of the possible moves in the dark, and additional time and attention needed for three moves per day. However, in a large multiple lateral system, if soil intake rate permits seven-hour lateral set time, there can be a savings on amount of lateral lines required. This is done many times to save on initial equipment investment, but later on, additional laterals can be added to change the lateral system from three-moves-per-day to a two-moves-per-day system.

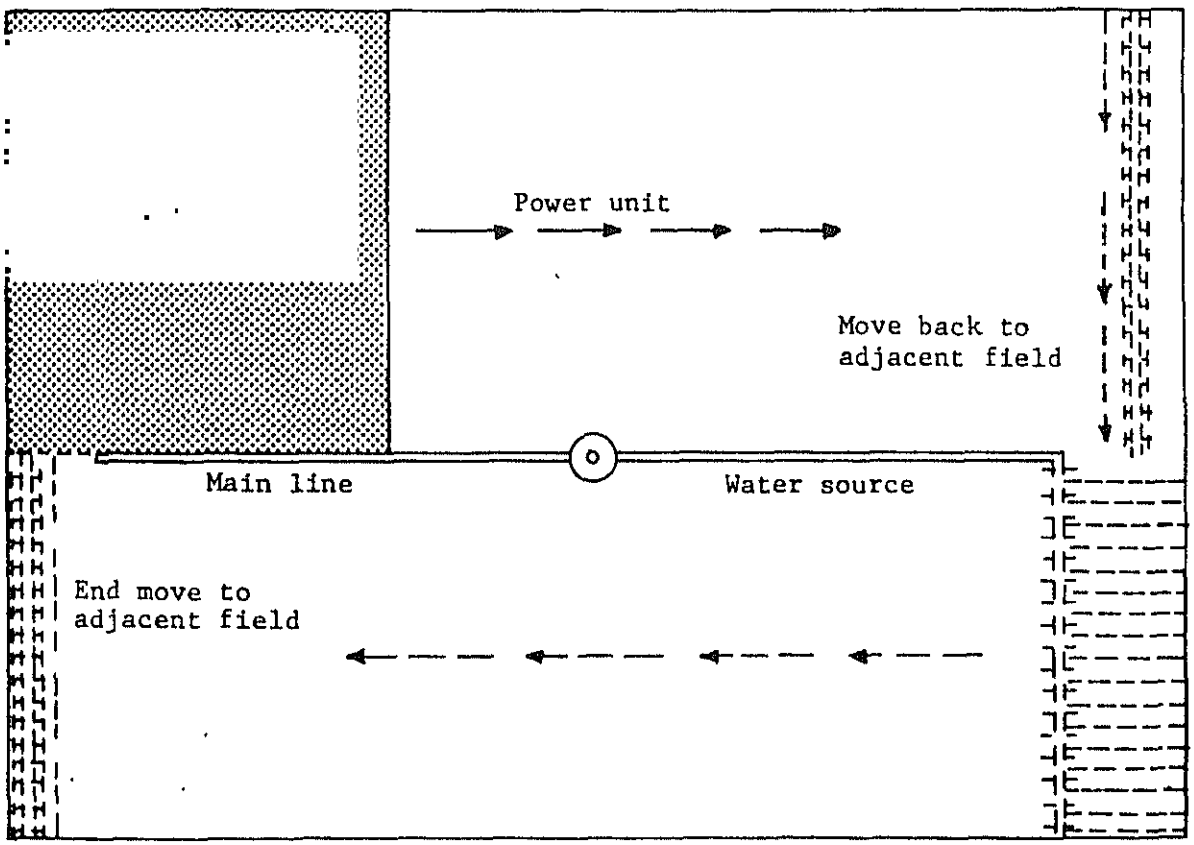


Figure WA685.66.1 - Operation of Sidewheel-Roll System with Trailing Line

SUBPART G - CENTER PIVOT SYSTEMS

WA685.71

WA685.70 Description.

(a) This system consists of a single sprinkler lateral supported by towers and anchored at a fixed pivot structure usually located in the center of the field. Nozzles are spaced at intervals, either uniform distance with varying sprinkler discharge or uniform sprinkler discharge at variable decreasing distances. The nozzles may be high pressure impact, low pressure impact, or one of the various spray nozzle packages. Generally the extreme end of the lateral has a larger nozzle designed to irrigate the outer fringe of the radii. Each tower, which is mounted on wheels, tracks, or skids, has a power device designed to propel the system around the pivot point. Each tower is spaced from 80-250 feet and lateral lengths vary from 200 to 2600 feet with most common lengths of 1320 feet, covering approximately 125-140 acres per 160 acre (1/4 section). There are five types of power units for propelling a center pivot system which are:

(1) Hydraulic water drive

(2) Hydraulic oil drive

(3) Electric motor drive (most common in Washington)

(4) Air-pressure drive

(5) Mechanical or cable drive

(b) Use of the center pivot has grown rapidly since it was first patented. The system has seen many changes and modifications during its development. Newer systems can be purchased with swing arms (corner units) that swing out to catch corners of a field and older systems can be retrofitted to cover nearly 155 acres of a 160 acre section. In recent years, low pressure impact and spray nozzles have become standard equipment to lower pressure requirements and energy costs. Most recent changes have included the addition of a boom slightly off perpendicular to the pivot tower located on the outer portion of the tower, they aid in lowering the excessively high application rate of spray nozzles. The introduction of drop tubes equipped with bubbler type devices allow for discharge of these pivots directly at ground level into a furrow. Operating pressures range from 5 to 100 psi, dependent upon nozzling.

WA685.71 Advantages and Limitations

The primary advantage of a center pivot is its low labor requirement. One individual can adequately irrigate over 1000 acres with pivots. The ability to discharge nutrients and chemicals uniformly through the irrigation water has also saved trips through the field. The systems work best on a circular field or on a large square field, so that the wasted corners can be picked up by another pivot. Disadvantages of these systems include their capital cost and the loss of production on approximately 20% of a

WA685.71

160 acre field, unless equipped with a corner units or irrigated by different equipment such as hand lies or side-rolls. These systems work best on coarse, high intake soils for which they were originally developed. With their expansion into areas having finer, low intake soils, problems have resulted from erosion due to the high application rates and the tendency for the wheels to cut deep ruts. The lower the soil's intake, the greater the magnitude of the problem especially on high silt content soils. Special tillage, agronomic and mechanical treatments (such as pitting and subsoiling) are often needed under center pivots. The other problem with a center pivot is its lack of ability to provide a large volume of water to fill a depleted soil profile during high consumptive use periods. They are generally designed to supply enough water to meet peak daily need. To overcome this short fall, the soil profile should be kept nearly full to protect against any system breakdown, which can occur frequently due to the numerous mechanical parts.

WA685.72 Design concepts for center-pivot sprinkle systems.

(a) Center-pivot systems are unique in that the rate of speed and the application rate must increase as the distance from the pivot point increases. Therefore, there is no one application rate for these systems. The outside end of the system is also unique, in that a big gun-type nozzle is used in this area. This results in an application rate that is entirely separate from that of the remaining system. However, when the big-gun is used in the corners it does affect the remaining system, in that it takes water away from it. Usually, a system is proposed, evaluated, changed as necessary, and then re-evaluated. The operating characteristics of these systems, for purposes of the irrigation guide, can be evaluated by determining the gross application rate of the area between the outer two towers approximately 3/4 of the distance out from the hub. If properly designed, the application will be relatively uniform over the remainder of the field and the rate of the application will decrease toward the pivot center of the system, and therefore, be satisfactory if the outer end is within the soil intake limitations.

(b) The speed of rotation of the center-pivot system normally varies from 12 hours to 120 hours per revolution. With the center-pivot self-propelled system, the application rate (iph) is the same regardless of the speed of rotation. However, the faster the rotation speed, the less total water applied per rotation. An average rotation speed is approximately 18 to 72 hours per revolution, and an average water application is approximately 0.5-1.0 inches. The speed of the center-pivot, self-propelled sprinkler, is usually controlled by the end tower, called the master tower. A system of alignment controls keep the other towers in line with the end tower. The discharge of evenly-spaced sprinklers is directly proportioned to the radial distance from the center. Therefore, the application rate varies continuously, increasing with increasing radius from the center.

(c) Many of the sprinklers used on center-pivot systems apply a stationary pattern similar to an ellipse. The application rates at a given distance fro the pivot begins at zero at the time when the sprinkler pattern reaches a given point, reaches a maximum when the sprinkler line is directly above the point, and decreases again and becomes zero when the trailing edge of the pattern passes the point. The depth applied at the given point is represente by the area under the application rate versus time curve. To achieve a uniform depth of application over the entire area of the circle, application rates must increase as the distance from the center increases. The radius of the sprinkler pattern does not increase as rapidly as the speed of travel for a given point on a sprinkler lateral. The actual time of application decreases as the distance from the pivot increases. Thus the application rates increase with distance from the pivot to maintain the same application depth. This is illustrated in Figure WA685.72.1 which shows a plot of time versus the ratio of maximum application rate to average application rate in inches per hour.

(d) Some center-pivot systems use a large partial-circle, hydraulic-revolving sprinkler called a large or big-gun at the end of the lateral line to fill in parts of the corners of the field. The area covered by the big-gu seldom receives as much water as the remainder of the field and generally produce lower yields. If runoff occurs at the outer end of the lateral line, it may be enough to lower yields due to lack of adequate soil moisture.

(e) Don Miles, an Irrigation Engineer and Extension Irrigation Specialist in the Agricultural Engineering Department at Colorado State University, investigated problems associated with center-pivot irrigation systems and developed a series of equipment and planting recommendations, which are as follows:

(1) First, crops could be planted in circular rows around the center-pivot system rather than planting crops in straight rows. This circular planting results in 94 percent of the land having longer rows than those traditional fields. Circular planting reduces wheel traction problems for the machine and increases irrigation uniformity.

(2) Second, the wheel traction problem can be lessened by building ridges for the wheels to run upon. In this way, the wheels do not run in excessively wet or muddy soils as they often do when water is allowed to run into the tracks. Another result is more uniform irrigation. On a bare field, the center-pivot system is run around a full circle marking the wheel track. A furrow is then plowed from the inside throwing soil toward the outside and over the wheel track. Then a furrow is plowed from the outside throwing soil toward the inside and over the wheel track. This builds a ridge for the wh upon. Next, the ridge top is flattened so the wh off. If it isn't flattened, the wheels may sli irrigation pipes may be broken. With the ridge center-pivot is run around a second time to mar and, if necessary, the ridge building process is

WA685.72(e)(3)

(3) Third, the irrigation uniformity can be improved by smoothing the land under the center-pivot system to remove any steep slopes. On most quarter-sections the land is rolling and this decreases the infiltration rate. Best results were achieved using a tillage and planting system developed as part of the project. In it, row crops are planted on trash-free beds with the crop residue being partially incorporated into the furrows between the beds.

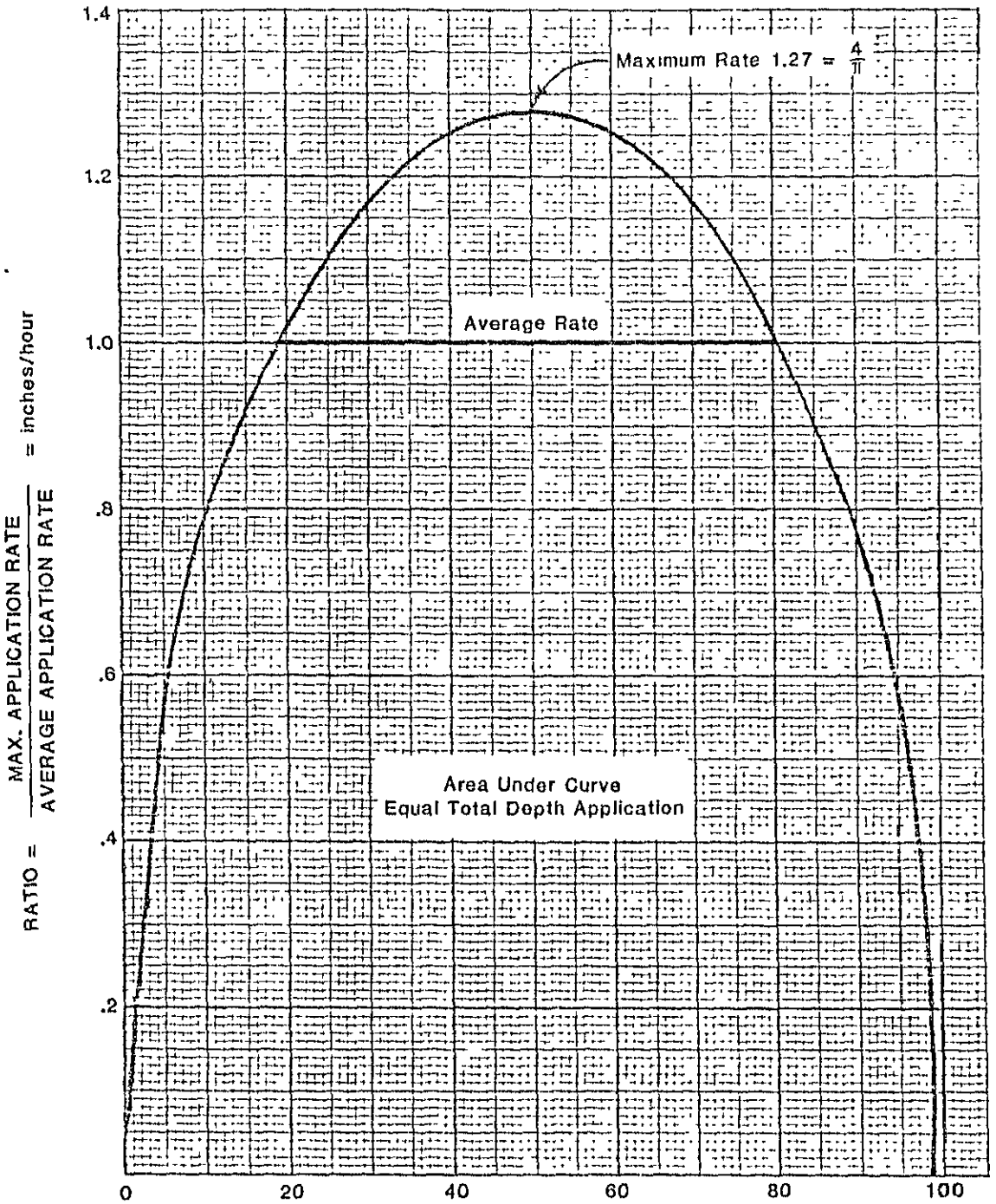


Figure WA685.72.1 - Relationship of Ratio of $\frac{\text{Maximum Application Rate}}{\text{Average Application Rate}}$ vs. Time of a Moving Sprinkler System (Center-Pivot)

WA685.72(f)(13)

(4) Fourth, pre-irrigation (irrigation before the soil is prepared for planting) should be used under center-pivot systems. The idea is to fill the root zone with moisture before working the soil and planting the crop. This helps to create a deep-root system and stores moisture for use during the periods when the sprinkler system is unable to keep up with the crop needs.

(5) Finally, it was determined that most farmers tend to run their center-pivot irrigation systems too fast. Frequent irrigation seals the soil and reduces the water infiltration and increases evaporation. Overall, the irrigation frequency depends upon the soil texture.

(f) Work by SCS in various erosion studies and system investigations raise questions on item 5 above. Research has shown that the slower the movement of a pivot the higher the potential runoff due to the length of application occurring in the outer reaches of a soil intake curve. (Figure WA685.73.3) SCS has found the following recommendations address the majority of runoff problems.

(1) Use soil moisture measurements to determine when to next irrigate.

(2) Practice cross slope farming or near contour farming operations.

(3) Use artifical storage such as pitters or dikers.

(4) Seed winter wheat early so as to provide a high level of ground cover during spring irrigations.

(5) Following low residue crops move up all fall seeding dates.

(6) It is essential to avoid burning residue.

(7) Select crop rotations to maintain optimum crop residue to add to soil tilth and build soil organic matter.

(8) Use surface roughening such as chiseling and leaving a cloddy condition.

(9) Use subsoiling to break up tillage pans and other restrictive layers. This operation must be done in dry soil conditions to be effective.

(10) Where the system provides water in great excess of the soil intake, use alfalfa or another permanent cover crop.

(11) Reduce gpms of the system and select a low water use crop.

(12) Start spring irrigations when there is at least 20% ground cover.

(13) Switch to a no-till farming operation.

(14) Practice minimum tillage to leave at least 1500 lbs of residue.

(15) Shorten the irrigation cycle whenever runoff is noted.

(16) Leave sufficient soil moisture reserve for winter moisture, + 5 inches or more. Winter moisture will save that much on system operation as well as reduce runoff and soil loss in the spring.

WA685.73 Design procedure.

(a) The hydraulic design of a center-pivot sprinkler system is very complex in nature. Most systems are designed by computer by the company proposing to do the installation. Since this is the case, the following procedure should be used to provide guidance to determine design adequacies relating to maximum application rates and depths of water applied by center-pivot sprinklers. NEH, Section 15, revised Chapter 11, Sprinkle Irrigation, reviews detailed design procedures. Other design requirements relating to main supply line, if any, are to be done by normal standard procedures. In addition, the brake horsepower requirement may be calculated. To determine suitability, it is first assumed that the system is properly designed so that a uniform depth of application is obtained.

(b) Assuming that a pivot is properly designed to provide a high discharge uniformity it must then be evaluated against:

(1) The ability to satisfy crop needs.

(2) The ability to supply crop needed volume to the root zone.

(3) The impact on the soil resource (whether erosive or not) and to what degree.

(c) The ability to satisfy crop needs should be evaluated first. A center pivot is inherently a low volume application system. It is often considered a deficit irrigation device. This means that at times during the growing season, insufficient water is applied to replace the crop use. The moisture used to make up this difference is extracted from the soil profile during peak use and is replaced by the system when the peak has past.

Sizing a minimum allowable volume for a pivot is a function of the crop need and soil water holding capacity. The following examples illustrate this point.

WA685.73(c)(2)

(1) Determine the volume of a system to meet the peak daily consumptive use.

Know: Crops - Potatoes
Soils - Quincy 1fs
Area - Sunnyside
Acres = 126 acres
Hours per cycle = 60 hours (2.5 days)
Application Efficiency = 70%

Solution: Consumptive Use (Appendix B - Sunnyside) = 10.99" July
Trial and Error - Assume 1" Net Irrigation
(Table WA683.51.1) - with Application = 1" and CU = 10.99"
Daily CU = 0.46"/day
Actual needed application = 0.46"/day x 2.5 days = 1.15"
Checking for peak daily CU with 1.15" net application
(Table WA685.51.1) Daily CU = 0.46"/day
Required gross system capacity $Q = \frac{453\ Ad}{H}$

Where $d = \frac{\text{Daily Consumptive Use (in./day)}}{\text{Application Efficiency}}$
A = acres irrigated by the system
H = hours operated per 24 hour day

In this example:

H = 24 hrs. (operating continuously for 2.5 days)
A = 126 acres
$d = \frac{0.46"/day}{0.70}$ = 0.66"/day gross (Table WA684.20.4)
$Q = \frac{(453)(126\ acres)(0.66"/day)}{24}$ = 1570 gpm

This volume would be needed to meet peak daily CU.

(2) Determine the volume of a system designed to use soil moisture reserve and an average monthly crop use.

Known: Crops - Potatoes
Soils - Quincy 1fs
Area - Sunnyside
Acres = 126 acres
Hours per cycle = 60 hours (2.5 days)
Application Efficiency = 70%

Solution: (Table WA682.50) Potatoes - 2 Ft. design depth
- 25% allowable deficit
(Appendix A) Soils - Quincy lfs
WHC 0-1 = 0.08"/"
WHC 1-2 = 0.10"/"

only 2 foot needed since this is the plant rooting depth.

Total WHC = 0.08 x 12 + 0.10 x 12 = 2.16" WHC

Available soil reservoir = 2.16" AWC x 0.25 (deficit) = 0.54*

*Assuming full profile before deficit starts (Appendix B - Sunnyside) CU by peak months
June = 4.85" July = 10.99" August = 8.85"

To use the following procedure, the system must have the ability to fill the root zone before deficit starts and the ability to catch up after the peak. It is therefore necessary to consider the months adjacent to the peak.

(Table 683.51.1) peak CU June = 0.19"/day at 1.0" replacement
(Table 683.51.1) peak CU August = 0.36"/day at 1.0" replacement

Evaluate peak month using soil deficit
10.99" July -0.54" = 10.45" application need
July has 31 days allow 3 days system down time
Net Irrigation Days = 31 -3 = 28 days

Find daily application need = $\frac{10.45"}{28 \text{ days}}$ = 0.37"/day July

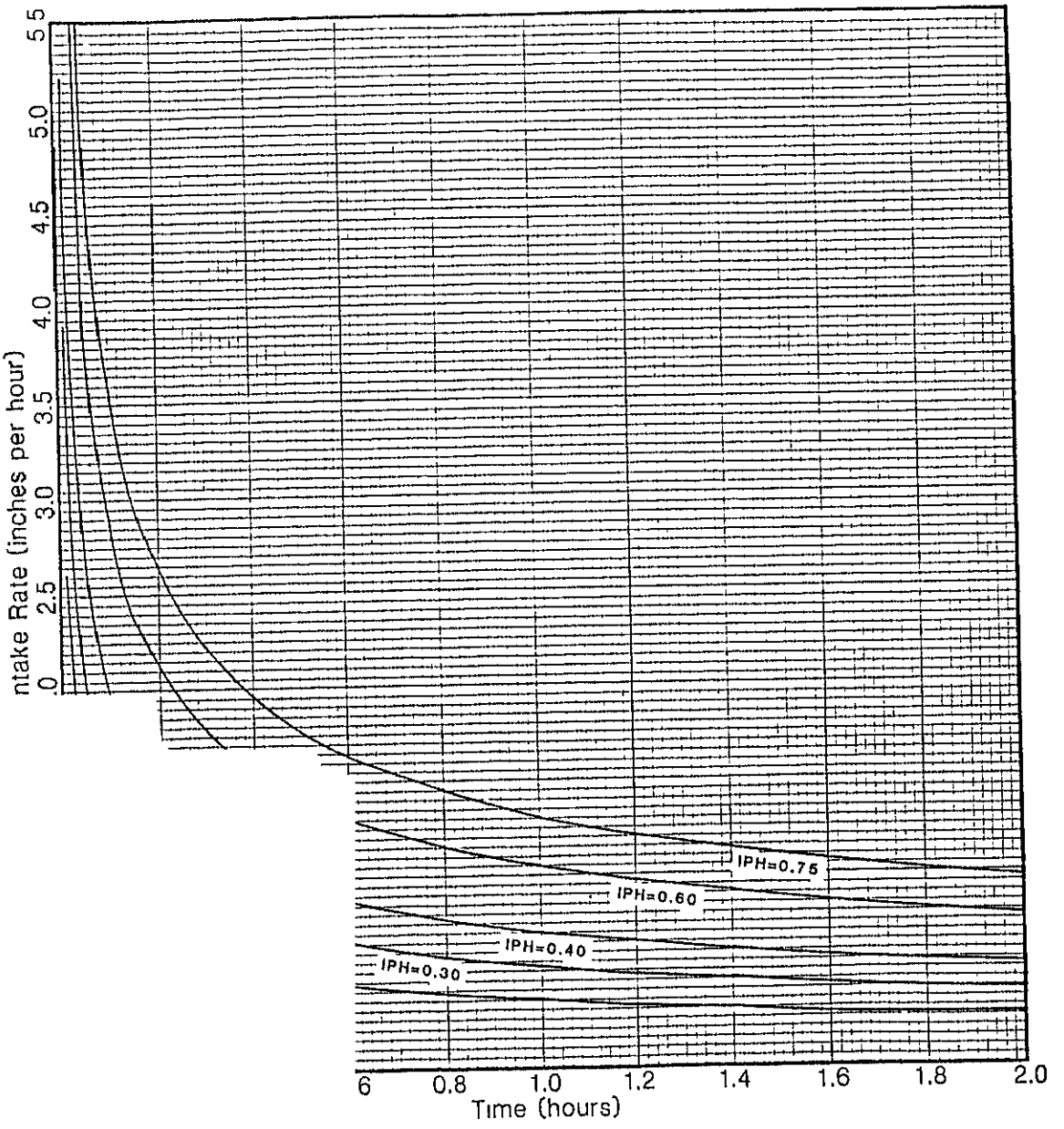
If a system was designed to use soil deficit in July it could be designed for 0.37"/day, it is possible that the soil would be at its allowable deficit of 25% when another peak situation could occur. Design for the greater of the two, in this case the peak daily cu value of 0.37"/day.

$$d = \frac{0.37"/day}{0.70 \text{ (efficiency Table WA684.20.4)}} = 0.53"/day \text{ gross}$$

$$Q = \frac{(453)(126 \text{ acres})(0.53"/day)}{24} = 1260 \text{ gpm}$$

Use of this procedure is considered risk design and should only be considered where high levels of irrigation water management can be assured. The landowner needs to be totally aware of the element of risk involved. When management is practiced, significant benefits are derived from reduced runoff and erosion problems as well as significant energy savings without a reduction in yield or quality.

WA685.73(c)



oil Intake Curves as a Function of Time

-VI-WAIG, OCTOBER 1985)

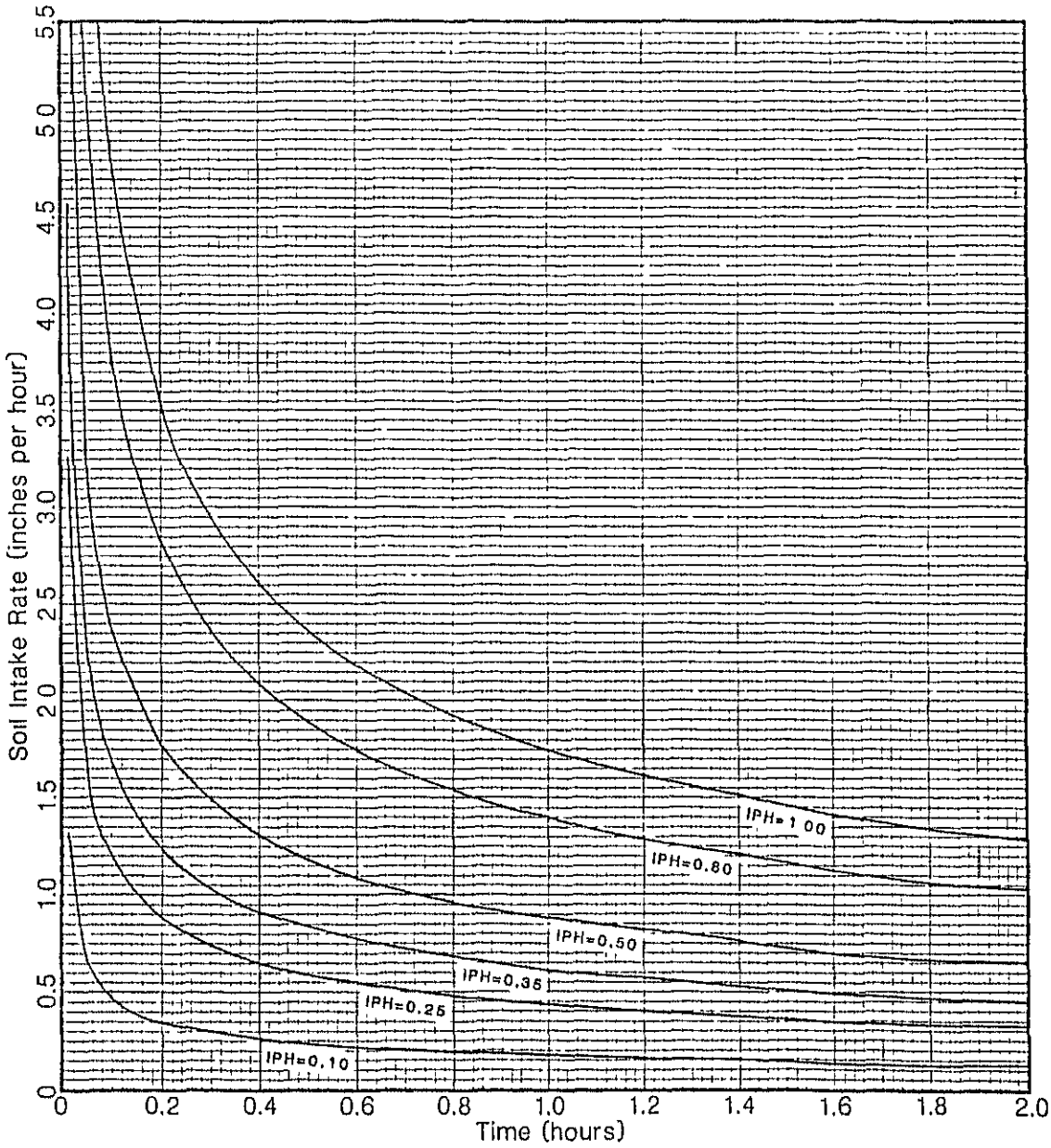


Figure WA685.73.1b - Soil Intake Curves as a Function of Time

WA685.73(e)

(d) The ability of the center pivot system to apply the water at a rate that can be absorbed by the soil is a direct function of the center pivot systems application rate and the soil intake characteristics. As seen in Figures WA685.73 1a and b, the intake characteristics of a soil are a function of rate (inches per hour) over time. As discussed in Part WA685.72(b), the application rate of a center pivot is fixed regardless of time, only applied volume changes. When the application rate occurs outside of the soil intake curve, a potential for excess application occurs (Figure WA685.73.3). Various factors influence the degree of potential excess application.

(1) The basic intake rate of the soil, Part WA681.23(d) discusses factors that can influence the intake rate and Appendix A - Soils, gives expected values by soil series. Generally, the higher the degree of fines (silt and clay) in a soil, the slower the intake rate. Faster intake rate results are found in coarse grained (sands and gravels) materials with few fines. Figures WA685.73 1a and b depict the general rate vs. time curves for various sprinkler intake rates for Washington soils. The general shape of these curves is defined by the equation:

$$I = 1.75 \times IPH \times T^{-0.4364}$$

Where I = Intake rate (IPH) at any given time
IPH = Basic sprinkler intake value (IPH)
T = Time of occurrence (Hours)

(2) Center pivot packaging influences how the water is applied to the soil. Various center pivot packages control the rate that a volume of water is discharged from the pivot. These factors include:

a. Volume discharged at a given point depending upon the discharge point, spacing and volume.

b. Wetted width that the discharge is applied over.

c. The size of water droplet impacting the soil surface. Research has shown that the larger the droplet being discharged, the greater the energy impacted to the soil surface. This energy has the ability to compact and seal the soil surface. On fine textured soils, this has significantly lowered the intake rate of the soil.

(e) Computer models exist to evaluate the impact of a center pivot system upon the resource and cultural base. These models should be used for evaluation if the facilities exist to do so. A simplified approach is presented for evaluation if this is not possible.

Given: Maximum Radius Irrigated = R = 1320 ft.
Capacity of the System = Q = 1260 gpm
Systems for Evaluation
A. 360° Spray - Single Nozzle
B. Standard High Pressure Impact
Soils: Quincy LFS
Intake Rate = IPH = 0.91 (Appendix A)
Cycle Time = Hrs = 60 hours (2.5 days) per revolution

Solution: Field experience has indicated that the characteristics of a center pivot at 3/4 of its wetted length is an indication of a field average condition. That is if excess application exists at the 3/4 point, it gradually dimenishes towards the pivot and drastically increases towards the outer edge.

(1) Data is needed on the nozzle wetted width at the 3/4 point. This may be retrieved from a design printout or field investigation and then using Table WA685.74.4. If this data is not available, Table WA685.73.2 may be used.

From Table WA685.73.2 System A width = W = 30 feet
System B width = W = 160 feet

(2) Determine the time of concentration (Tc) of water being applied over a given point.

$$Tc = \frac{W \times Hrs}{4.7 \times R}$$

where W = nozzle wetted width (ft)
R = radius irrigated (ft)
HRS = hours per revolution

$$\text{System A Tc} = \frac{30 \times 60}{4.7 \times 1320} = 0.29 \text{ Hrs}$$

$$\text{System B Tc} = \frac{160 \times 60}{4.7 \times 1320} = 1.55 \text{ Hrs}$$

(3) Determine the peak application rate (PAR)

$$PAR = \frac{183.75 \times Q}{R \times W}$$

$$\text{System A PAR} = \frac{183.75 \times 1260}{1320 \times 30} = 5.85 \text{ inches per hour (IPH)}$$

$$\text{System B PAR} = \frac{183.75 \times 1260}{1320 \times 160} = 1.10 \text{ inches per hour (IPH)}$$

WA685.73(f)(2)

(4) Potential runoff will not occur if the peak application rate (PAR) is less than the soil intake rate at a given time. The peak application would be expected to occur at 1/2 of the time over a point.

Time of peak application = Tc/2

System A = 0.29/2 = .145 Hrs
System B = 1.55/2 = .775 Hrs

(5) Determine if there is a potential runoff problem:

a. Mathematically - Soil intake rate at a given time

$I = 1.75 \times IPH \times T^{-0.4364}$

System A $I = 1.75 \times 0.91 \times 0.145^{-0.4364} = 3.70$ IPH

IPH of system > I of soil runoff potential exists
5.85 4.55 runoff potential <u>exists</u> with System A

System B $I = 1.75 \times 0.91 \times 0.775^{-0.4364} = 1.78$ IPH
1.10 < 1.78 runoff potential <u>does not exist</u> with System B

b. Graphically - Plot the peak application rate on the appropriate Figure (WA685.73.1 a or b) against the time of concentration. The peak will occur at Tc/2. Develop a bell curve. Refer to Figure WA685.73.3

Graphical plotting further aids in determining the volume of potential runoff comparad to volume applied.

From Figure WA685.73.3, it appears that a 360° spray system could produce approximately 15% runoff potential while the standard high pressure impact would produce none.

(6) The degree of actual runoff depends on land slope, cultivation practices, and surface cover (both canopy and residues). Part WA685.72(f) gives methods to offset this potential runoff from actually moving.

'or runoff, the following items should be

l not receive the water needed to satisfy crop

:als will be moving with surface water movement.

(3) Water movement generally creates erosion.

(4) Concentration of runoff water can create downstream problems.

(5) A percentage of the pumping and power costs are lost revenue with no chance of yield benefit.

(6) Actual seasonal power cost could be significantly higher by pumping excess to make up for the crop needs lost to runoff.

(g) Research is presently addressing the degree of surface sealing that occurs due to the droplet energy of impact sprinkler systems. As procedure for their incorporation into center pivot applications become available they will be incorporated into this subpart. In the interim it is recommended that if surface sealing condition is experienced locally, the intake values (IPH) in Appendix A be reduced by 0.1 when evaluating impact sprinkler systems.

Table WA 685.73.2

System	Operating Pressure	Wetted Diameter
Typical High Pressure Impact	75+ psi	160 feet
Medium Pressure Impact	50-75	130 feet
Low Pressure Impact	35-50	100 feet
360 Degree Spray	20-35	30 feet
180 Degree Spray	20-35	15 feet
Spray Boom	20-35	120 feet

WA685.74 Design charts.

(a) Tables, charts, and graphs have been developed to assist in this evaluation. They are at the end of this section. Also, refer to NEH, Section 15, revised Chapter 11, Sprinkler Irrigation.

(TABLES & FIGURES FOLLOW)

WA685.73.3

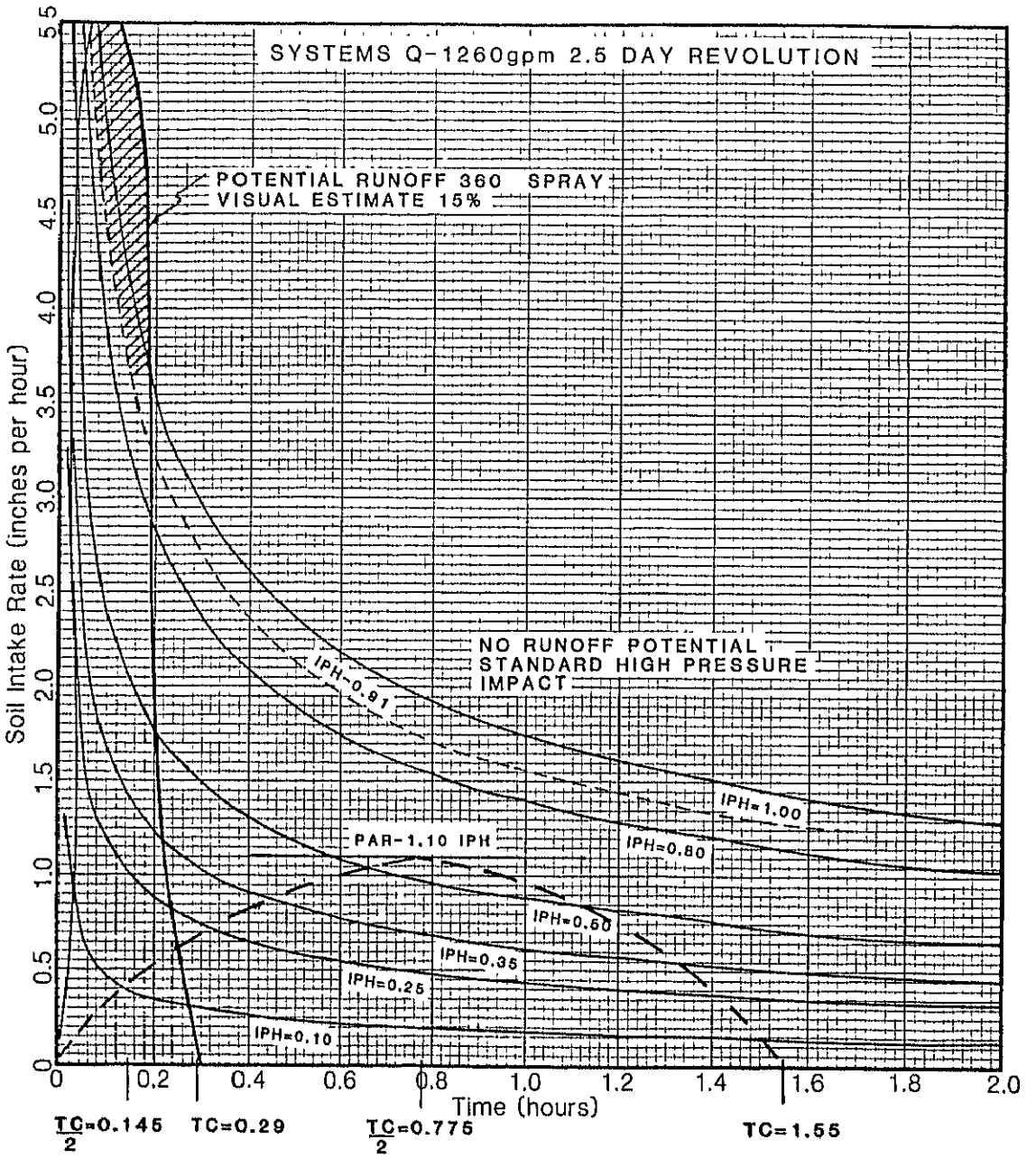


Figure WA685.73.3 - Graphical Solution to Runoff Potential

(WA210-VI-WAIG, OCTOBER 1985)

Total Lateral Length	Area* Covered (acres)	Hours Per 1" Application (Column 1) Gross Capacity in in./day (Column 2)									
		400 gpm		600 gpm		800 gpm		1000 gpm		1200 gpm	
		hrs/ in.	in./ day	hrs/ in.	in./ day	hrs/ in.	in./ day	hrs/ in.	in./ day	hrs/ in.	in./ day
500	26	29.2	.82	19.5	1.23	14.6	1.65	11.7	2.06	9.8	2.44
550	30.5	34.4	.70	23.0	1.04	17.2	1.4	13.7	1.75	11.4	2.10
600	35.3	38.7	.62	26.4	.91	19.8	1.2	15.9	1.51	13.2	1.82
650	40.6	45.6	.52	30.4	.79	22.9	1.05	18.2	1.32	15.2	1.58
700	52.1	58.6	.41	39.0	.61	29.4	.82	23.4	1.02	19.5	1.23
800	58.4	66.1	.36	44.0	.54	32.8	.73	26.3	.91	21.9	1.09
850	65.0	73.0	.33	48.7	.49	36.6	.65	29.3	.82	24.3	.99
900	72.2	81.2	.29	54.2	.44	40.6	.59	32.5	.74	27.1	.89
950	79.5	89.2	.27	59.5	.40	44.8	.53	35.8	.67	29.8	.81
1000	87.4	98.3	.24	65.5	.37	49.2	.49	39.4	.61	32.8	.73
1050	95.3	107	.22	71.5	.33	53.6	.45	42.9	.56	35.7	.67
1100	104.0	117	.20	78.0	.31	58.5	.41	46.8	.51	39.0	.61
1150	112.6	126	.19	84	.29	63.4	.38	50.7	.47	42.2	.57
1200	121.9	137	.17	91.5	.26	68.6	.35	54.9	.44	45.6	.52
1250	130.0	146	.16	97.5	.25	73.1	.33	58.5	.41	48.7	.49
1300	141.3	159	.15	106	.23	79.5	.30	63.6	.38	53.0	.45
1350	151.6	170	.14	113	.21	85.5	.28	68.3	.35	56.7	.42
1400	162.0	182	.13	122	.20	91.2	.26	73.0	.31	65.0	.37
1450	173.2	194	.12	130	.18	97.5	.25	78.0	.31	65.0	.37
1500	184.7	203	.11	138	.17	104	.23	83.0	.29	69.2	.35

*With gun sprinkler on entire circle and gun coverage of 100 feet.

Table WA685.74.2-Time Required per 1" Gross Application and Gross Capacity

% of Water Applied in Last 100 Feet 1/	Total System Length (in Feet) 2/	Total Area Square Field Twice Length of System (in Acres)	Area Covered in Acres 3/ With Gun Sprinkler Used Only In Corners	With Gun Sprinkler Used on Entire Circle
36.0	500	23.0	22.0	26.0
33.1	550	27.8	26.2	30.5
30.6	600	33.1	30.8	35.3
28.4	650	38.8	36.0	40.6
26.5	700	45.0	41.3	46.1
24.8	750	51.8	47.2	52.1
23.4	800	58.8	53.3	58.4
22.1	850	66.31	59.8	65.0
21.0	900	74.5	66.7	72.2
20.0	950	82.9	74.0	79.5
19.0	1000	91.8	81.7	87.4
18.1	1050	101.3	89.5	95.3
17.3	1100	111.0	98.0	104.0
16.6	1150	121.3	106.6	112.6
16.0	1200	132.2	115.7	121.9
15.4	1250	143.3	123.8	130.0
14.8	1300	155.0	134.0	141.3
14.3	1350	167.3	145.0	151.6
13.8	1400	179.8	155.2	162.0
13.3	1450	193.0	166.5	173.2
12.9	1500	206.0	177.7	184.7

1/ Less volume of end gun when used.
2/ Generally outside drive wheel approximately 50 feet from end.
3/ Based on 100 ft. gun coverage.

Table WA685.74.3 - Center-Pivot Systems

Table WA685.74.4 - Nozzle Discharge GPM and Average Wetted Diameter for Sprinkler Nozzles

1/	Nozzle Size (In.)	Nozzle Pressure (PSI) 25	30	35	40	45	50	55	60	65	70	75	1/
60'	3/32	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0				70'
	7/64	1.7	1.9	2.0	2.2	2.3	2.4	2.6	2.7				
70'	1/8	2.2	2.4	2.6	2.8	3.0	3.2	3.3	3.5	3.6			80'
	9/64	2.9	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6			
	5/32	3.5	3.9	4.2	4.5	4.7	5.0	5.2	5.5	5.7	5.9		
80'	11/64	4.3	4.7	5.1	5.4	5.7	6.0	6.3	6.6	6.8	7.1		90'
	3/16	4.0	5.5	6.0	6.4	6.8	7.2	7.5	7.8	8.1	8.4	8.7	
90'	13/64	5.9	6.5	7.1	7.6	8.1	8.5	8.9	9.2	9.5	9.8	10.2	100'
	7/32	6.8	7.6	8.3	8.9	9.4	9.9	10.3	10.7	11.2	11.6	12.0	110'
	1/4		9.9	10.7	11.4	12.1	12.8	13.5	14.1	14.8	15.4	16.0	
100'	9/32		12.4	13.4	14.3	15.2	16.1	17.0	17.9	18.7	19.5	20.3	125'
110'	5/16		15.2	16.5	17.7	18.9	20.0	21.0	22.0	23.0	23.9	24.8	
	11/32			19.7	21.1	22.4	23.6	24.8	25.9	27.0	28.1	29.2	145'
125'	3/8			22.8	24.4	26.0	27.6	29.2	30.6	32.0	33.3	34.5	
	13/32			27.2	29.1	30.9	32.7	34.3	35.9	37.4	38.9	40.3	165'
145'	7/16				33.9	35.9	37.8	39.7	41.5	43.3	45.1	46.8	
	15/32				38.9	41.1	43.3	45.4	47.4	49.4	51.4	53.3	
165'	1/2				43.6	46.0	48.4	50.7	53.0	55.3	57.5	59.6	185'
	17/32					51.6	54.0	56.4	58.8	61.2	63.5	65.8	
	9/16					57.5	60.6	63.6	66.5	69.4	72.2	74.9	205'
	5/8		185'			70.0	73.6	77.2	80.8	84.4	87.8	91.0	

1/ Approximate diameter of coverage. For sprinkler with two different nozzles, the wetted diameter is coverage of the larger nozzle.

NOTE: This table is not valid for wetted diameter when designing under-tree, low-angle revolving sprinkler, or newer "CDS" of "Diffuser" nozzles.

SUBPART H - SOLID-SET LATERAL SPRINKLERS

WA685.81(a)(1)

WA685.80 Description.

(a) The solid-set system is rapidly becoming more advantageous, particularly for high-value crops. With this system, the main line and the lateral lines remain in place during the growing season. Sometimes the solid-set system is permanent with the main line and lateral lines buried. With other solid-set systems, the pipes are installed in the field after planting and remain there until harvest or end of irrigation season.

(b) These systems are being used to apply irrigation water to meet crop demands, for climatic control such as: frost protection, humidity control, bloom, setting control, and fruit quality improvement.

(1) For frost protection, the entire field must be covered with a fine mist of water during freezing temperatures. Sequencing of on and off has been in practice in some areas. The system should be turned on before air temperature at the plant level reaches 32°F. The plants become covered with ice, but the freezing water releases latent heat which is absorbed by the plants, thus giving protection until the temperature drops too low. Protection can be obtained for temperatures below 25°F. Damage generally occurs if the spraying is removed before the temperature has risen and the ice has melted from the plants. Frost protection is particularly adapted to cranberries, strawberries, low-growing vegetables and most orchard crops. The ice buildup may be damaging to some crops which are unable to support a heavy sustained ice load.

(2) For reducing high temperatures and increasing humidity, the entire field must either be covered continuously or by a frequent on-off cycling operation. This practice can reduce field temperatures around the plant as much as 15°F during periods of high temperature.

(c) Solid-set systems have a low labor requirements and can be adapted to irregularly-shaped fields. Investment costs are generally high and lateral lines and sprinkler risers may interfere with field operation.

WA685.81 Design concepts and limitations.

(a) There are two general types of solid-set systems.

(1) Where any number of laterals are operated simultaneously, to the limit of the water supply; this type may be modified to a rapid sequence system where water is applied for approximately 3 minutes to each one-fifth of the area, and the irrigated areas is covered each 15 minutes until the desired application has been made. This may be effective on lower intake rate soils, where advantage can be taken of the early higher intake rate characteristic of soils.

WA685.81(a)(2)

(2) The automatic head sequencing system is a group of sprinklers, e.g., one of two heads per lateral, that are operated the required time; then system is shut off, thereby dropping pressure, thereby closing sprinkler heads and another group of sprinkler heads are turned on. This sequence is repeated until the field is irrigated the needed amount. Solid-set systems are quite easy to automate, requiring an automatic controller device and solenoid-controlled valves. Other types of remote-controlled valves, such as hydraulic type are available.

(b) A diamond pattern for sprinkler head layout is recommended, thereby improving application uniformity, and to some degree, affecting application efficiency and hydraulics in the first part of the lateral. Adequate over-lapping patterns from adjacent sprinkler nozzles are required regardless of head layout.

WA685.82 Design procedures.

Hydraulic evaluation of laterals and mainline is the same as with hand-move and mechanical-move lateral sprinkler system. NEH-15, Chapter 11, Irrigation, provides guidance in planning and design of sprinkler systems.

SUBPART I - TRICKLE (DRIP)

WA685.90 Description.

Trickle irrigation is the slow application of water on or beneath the soil surface by drip, subirrigation, bubbler, and spray systems. Water is applied as discrete or continuous drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line. Water is dissipated from a pipe distribution network under low pressure in a predetermined pattern. The outlet device that emits water to the soil is called an "emitter." The shape of the emitter reduces the operating pressure in the supply line, and a small volume of water is discharged at the emission point. Water flows from the emission points through the soil by capillarity and gravity.

WA685.91 Types of systems.

(a) Drip - In drip irrigation, water is applied slowly to the soil surface as discrete or continuous drops or tiny streams through small openings. Discharage rates are less than 3 gallons per hour (gph) for widely spaced individual applicators and less than 1 gph/ft for closely spaced outlets along a tube (or porous tubing). This is the most predominate method used in Washington. Common types are:

(1) In line emitters, evenly spaced, at various available increments. Generally used in orchards and for ornamental plantings. These emitters generally have a uniform discharge over a specified pressure range.

(2) Emitters, insert type. These emitters are generally installed adjacent to the plant manually. These emitters generally have a prefixed orfice size to discharage a given rate at a very tight pressure range. This type of emitter allows for insertion of more outlets as the water need for a plant increases. Attachment of small tubing has been used to deliver water to a specific point. These emitters are also available in pressure compensating models to deliver water at a uniform rate over a wide pressure range. These emitters have been used on all trickle irrigated crops (Table WA682.50).

(3) Drip tape has small pinhole, emitter points evenly spaced along the line. The ability to handle even discharge is governed by the type of tubing. Means of controlling discharge varies by manufacturer but basically there are three methods.

(i) Single tubing with evenly spaced holes (no pressure compensation).

(ii) A dual tubing with mainflow in one tube discharging a volume at a preset wide spacing into a secondary tube with narrower spaced outlets (limited degree of pressure compensation).

WA685.91(a)(3(iii)

(iii) A triple tubing, based on the same principle as dual tubing, but with one additional chamber before discharge (fair degree of pressure compensation).

Drip tape is used predominately for vegetable type crops.

(b) Subirrigation

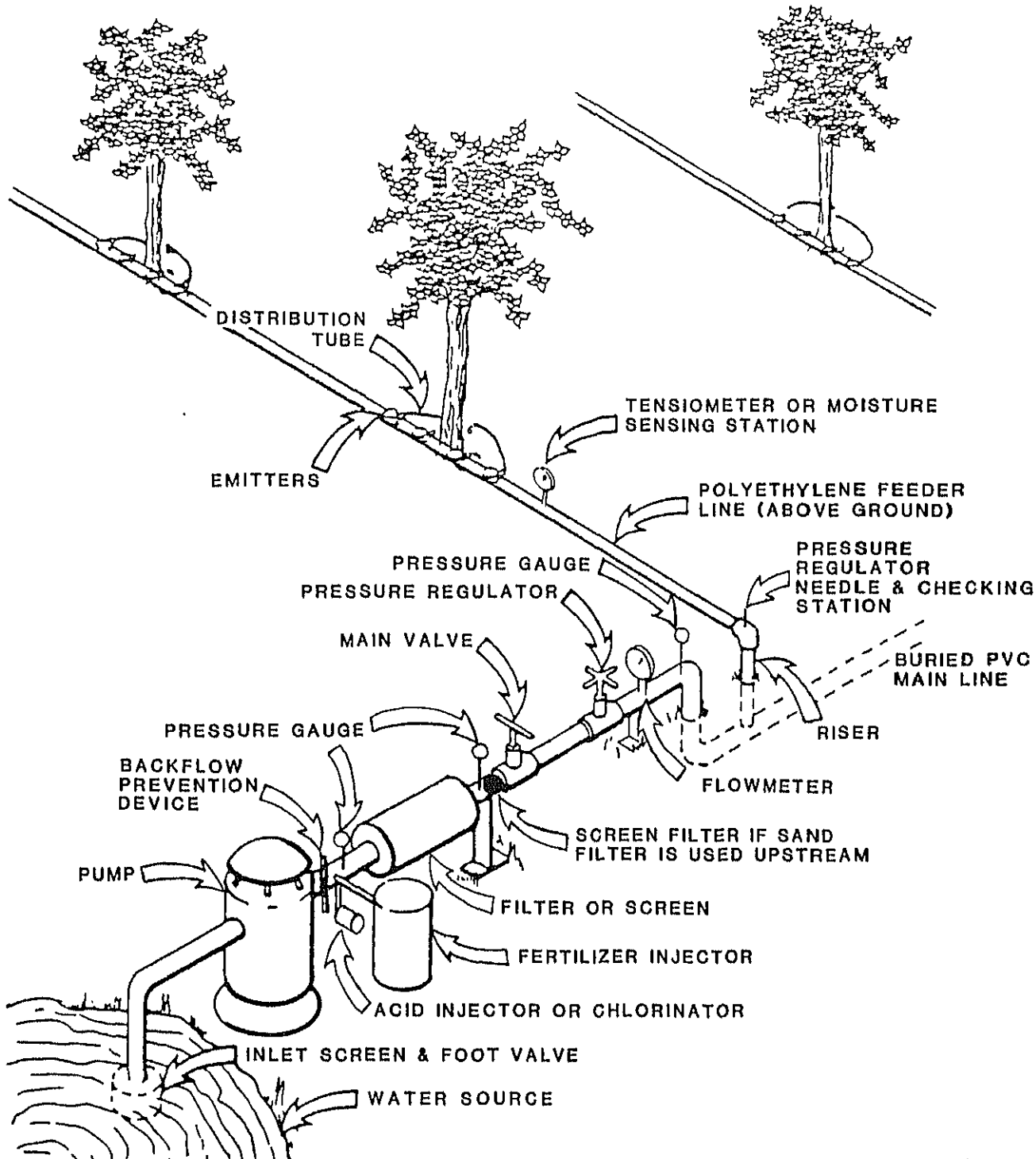
In subirrigation, water is applied slowly below the soil surface through emitters with discharge rates in the same range as those for drip irrigation. This is relatively new and has been used on a limited basis in vegetable crops and some cotton fields in other states. This method of application is not tobe confused with subirrigtion, in which the root zone is irrigated through or by water table control.

(c) Bubbler

In bubbler irrigation, water is applied to the soil surface in a small stream or fountain from an opening with a point discharge rate greater than that for drip or subsurface irrigation but less than 1 gallon per minute (gpm). The emitter discharge rate normally exceeds the infiltration rate of the soil, and a small basin is required to control the distribution of water. A benefit to this method is the reduced filtration requirements due to the large discharge orfice.

(d) Spray

In spray irrigation, water is applied to the soil surface as a small spray or mist. The air is instrumental in distributing the water, whereas in drip, bubbler, and subsurface irrigation, the soil is primarily responsible for distributing the water. Discharge rates in spray irrigation are lower than 30 gph (1/2 gpm). These emitters are gaining in popularity for many reasons. Since they function much like a sprinkler is discharging a stream of water, close inspection is not needed to see if they are operating. They also have the ability to cover upwards of a 30 foot diameter allowing for a degree of cover crop growth. These emitters are often desired in a conversion from sprinkler to trickle in orchards due to the ability to provide water to the majority of the feeder roots established under sprinkler. Spray systems also exhibit a lower degree of plugging problems and filtration equipment.



Note: All equipment indicated may not be needed on each design.

Typical Drip Irrigation System
Figure WA685.92.1

WA685.92(i)

WA685.92 System components.

System components should include the following (See Figure WA685.92.1):

(a) Pressurizing point of prescreen water. May be a pump or gravity flow that generates between 5 and 20 psi pressure at the outlet emitter.

(b) Backflow prevention device if chemical injectors are located downstream and backflow conditions are possible. This is needed so as not to contaminate the water source.

(c) Injectors as needed for supplying fertilizers or chemicals needed to assure proper system operation (see Part WA685.98).

(d) Pressure gages upstream and downstream of the filter or screen. These are used to aid when the filter or screen needs cleaning or flushing by monitoring the pressure drop. The downstream gage is used to regulate delivery pressure needed for operation of the system.

(e) Filter or screen to remove sand, algae, trash, etc. that may plug the emitters. These devices are often used in combination. Good water quality along with delivery pressure are the most important elements in trickle irrigation to assure proper operation of the emitters in supplying the needed water. Tables WA685.98.1 thru 3 describe some of the water quality factors to consider in trickle design. The filters or screens may be cleaned mechanically or automatically. Automatic operation is preferred and generally when the pressure drop across the apparatus is 10 psi or less.

f) Main valve to regulate flow into the system. These valves are often sufficient to regulate the pressure downstream. If variation in flow or pressure can be expected, a pressure regulator should be placed downstream of the main valve.

(g) Flow meter and pressure gage should be placed downstream of the last valve to allow for regulation of flow and pressure entering the system.

'Figure WA685.92.2) are generally buried PVC
al lines or polyethylene feeder lines at one

(i) Lateral lines and feeder lines are often mixed in terminology. A lateral line is generally buried PVC delivering water to a block of feeder lines or a buried line with small risers for spray systems. A feeder line is generally a polyethylene pipe, layed on ground, with a series of discharge emitters or orifices.

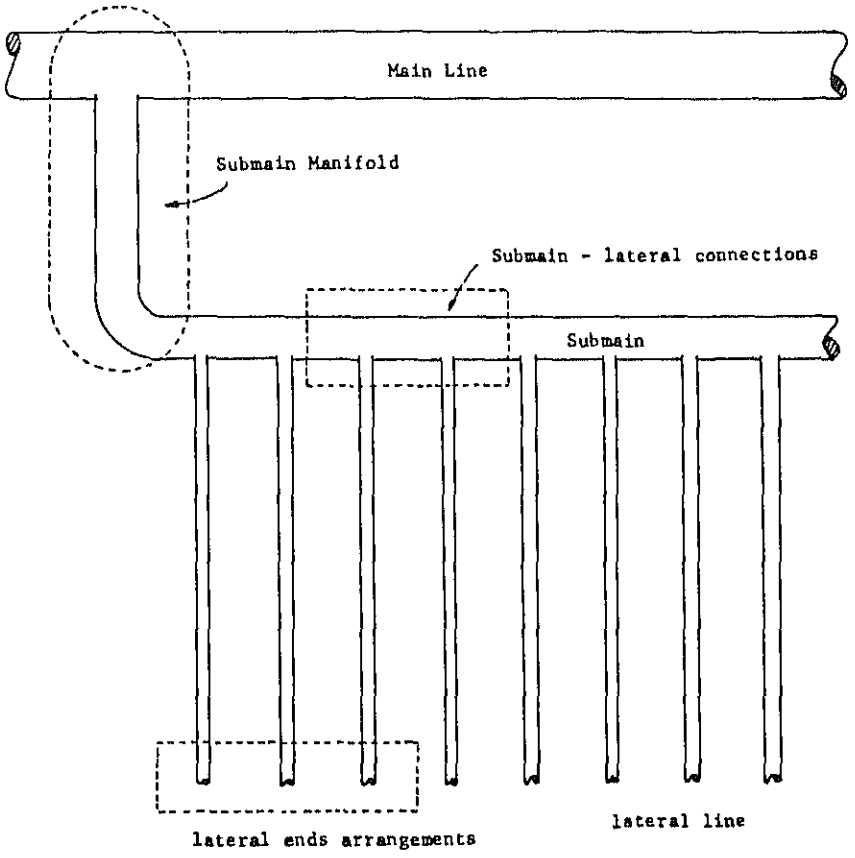


Figure WA685.92.2 Typical Trickle System Mainline, Submain, and Lateral or Feeder Line Detail

(j) Pressure regulator needle and check station are commercially available and are recommended on the manifold lateral as a final fine tune adjustment. The check station resembles a tire valve stem that allows for ease of pressure checking. Use of this assembly often saves on system cost when compared to the cost difference between normal and pressure compensating emitters, the other alternative.

(k) Moisture sensing station such as tensiometers or gypsum blocks, etc. (see Part 687.C) to assure proper irrigation timing to meet soil depletion and plant needs.

WA685.93 Design considerations.

Drip irrigation systems are subject to problems of clogging, salinity build-up, poor soil moisture distribution and relatively high installation costs.

(a) Clogging. Clogging of the emitter is the most serious problem of drip irrigation. Properly designed filtration systems will generally protect the system from particle clogging. In addition, the selection of water, if possible, which is of good quality, may prevent deposition of chemical build-up in the emitter passages or on the outlet, or biological growth in the pipe or emitter. Clogging can cause poor water distribution which in turn may damage the crop if emitters are plugged for a long period of time.

(b) Salinity. All irrigation water contains some salts which are left behind as the plants take up water. Due to the amount of water applied, these salts are pushed towards the fringes of the wetted soil. Applying more water than the plants consume, operating the system during the rainy period and/or using supplemental applications of sprinkler or surface irrigation may be necessary to prevent critical levels of salt build-up where rainfall is insufficient for leaching.

(c) Moisture distribution. Drip irrigation normally wets a part of the potential plant rooting area. Crop systems are generally limited to this area of moisture surrounding the emitter. The extent of this volume is a function of the emitter discharge, distances between emitters and soil type. Distribution of moisture should be a major consideration in design. For this reason, it is difficult to maintain a cover crop in an arid environment.

(d) Costs. The equipment and filtration needed for drip irrigation generally causes the costs to be high. The per acre costs are generally affected by filtration costs. Base costs for filtration are relatively the same for 20 acres as they are for 40 acres.

WA685.94 Design concepts.

A primary objective of good drip irrigation system design and management is to provide sufficient system flow capacity to adequately irrigate the least watered plant. Uniformity of application depends on the uniformity of emitter discharge. Nonuniform discharge is caused by pressure differences due to friction loss, elevation, variations between emitters due to manufacturing tolerances and clogging.

The designer of a trickle irrigation system has to make a rational choice about the duration of application, the number of emitters per plant, and the discarge per emitter that will give the best irrigation.

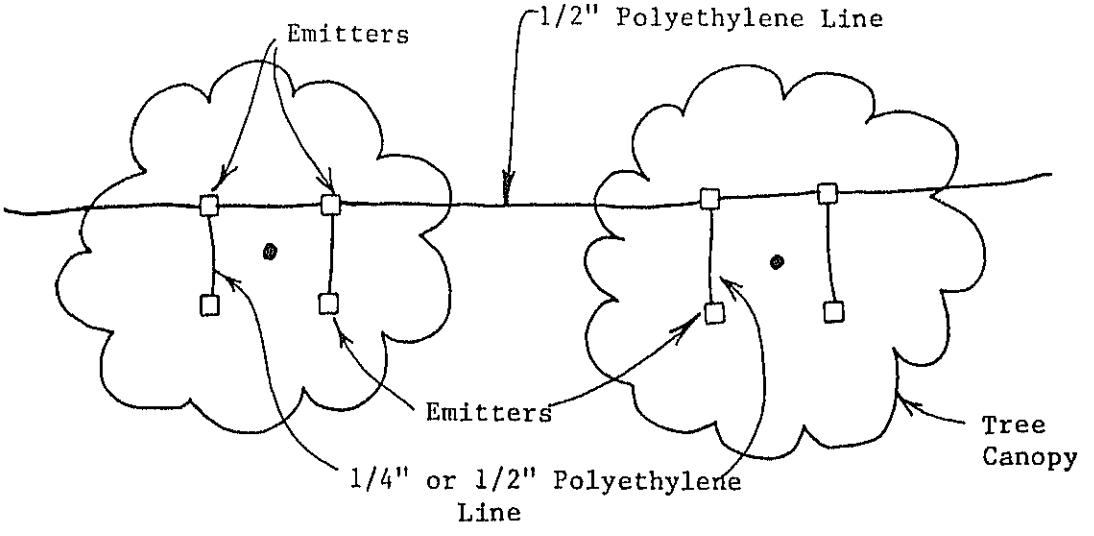
(a) Duration of application. The cheapest system which may be designed is one with the duration of application as long as possible, keeping the flow rates throughout the system low, thus reducing pipe sizes. The choice of duration for application will be influenced by the overall irrigation schedule and by a factor of safety which should be incorporated in the design. Application time must be sufficient to apply the water that has been consumed since the previous irrigation. It can vary up to 24 hours, however, it should not be continuous and if more than 15 hours are required, more emitters should be used. Ponding or runoff may be avoided by intermittent operation of the system.

(b) Number of emitters. Trickle irrigation of trees or shrubs requires a decision to be made about what percentage of roots require watering. In general, 40 percent of the area under the tree's drip line (mature size) will require moisture. A test may need to be run on the site to determine the lateral movement. Generally, the lateral movement (as a radius) for soils is as follows: coarse soils, 2-3 feet; medium, 4-5 feet; and fine soils, 6-8 feet. Generally the rate of lateral movement in fine soils is so slow that emitter spacing should be limited to 4-5 feet. The emitters should be spaced equidistant around the tree and should be located 1/3 of the distance from the trunk to the drip line. See Figure WA685.94.1.

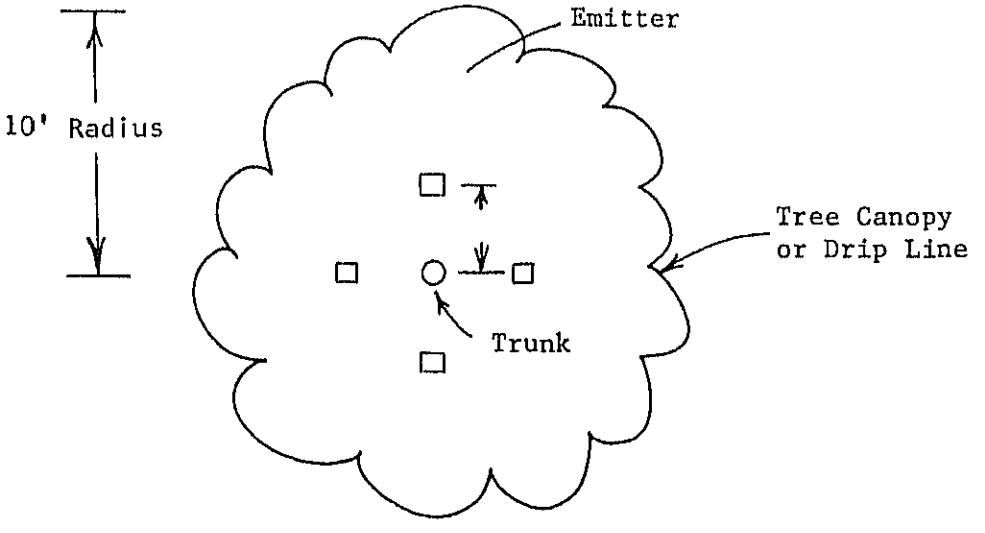
(c) Discharge per emitter. Emitters are mechanical outlets designed to operate at low pressure (5 to 25 psi) and to provide 1/2 to 3 gallons per hour (gph). One, one and one-half, and two gallons per hour capacity are most commonly used. Emitter outlets in the range of one-half to one gallons per minute (gpm) capacity, are classified as bubbler systems. Emitters that discharge to atmosphere above ground are classified as spray and operate up to 0.5 gpm. Companies providing mechanical outlets will furnish performance curves that show gallons per hour (gph) or gallons per minute (gpm) flow rates vs. pressure for each size of mechanical outlet to be used. See WA685.94.2. The recommended flow rate is +/- 15 percent of the average flow rate.

(d) Additional components. The selection of emitter discharge and number of emitters allows one to size the laterals, mains, lines and feeder lines. Generally, the laterals, submain and, main lines are constructed of PVC while the feeder lines are polyethylene (PE) materials.

Offset Emitters



Emitter Location



Place emitters of the distance from the tree trunk to the edge of the mature tree canopy; i.e., 10' radius x

. Emitter Installation and Location

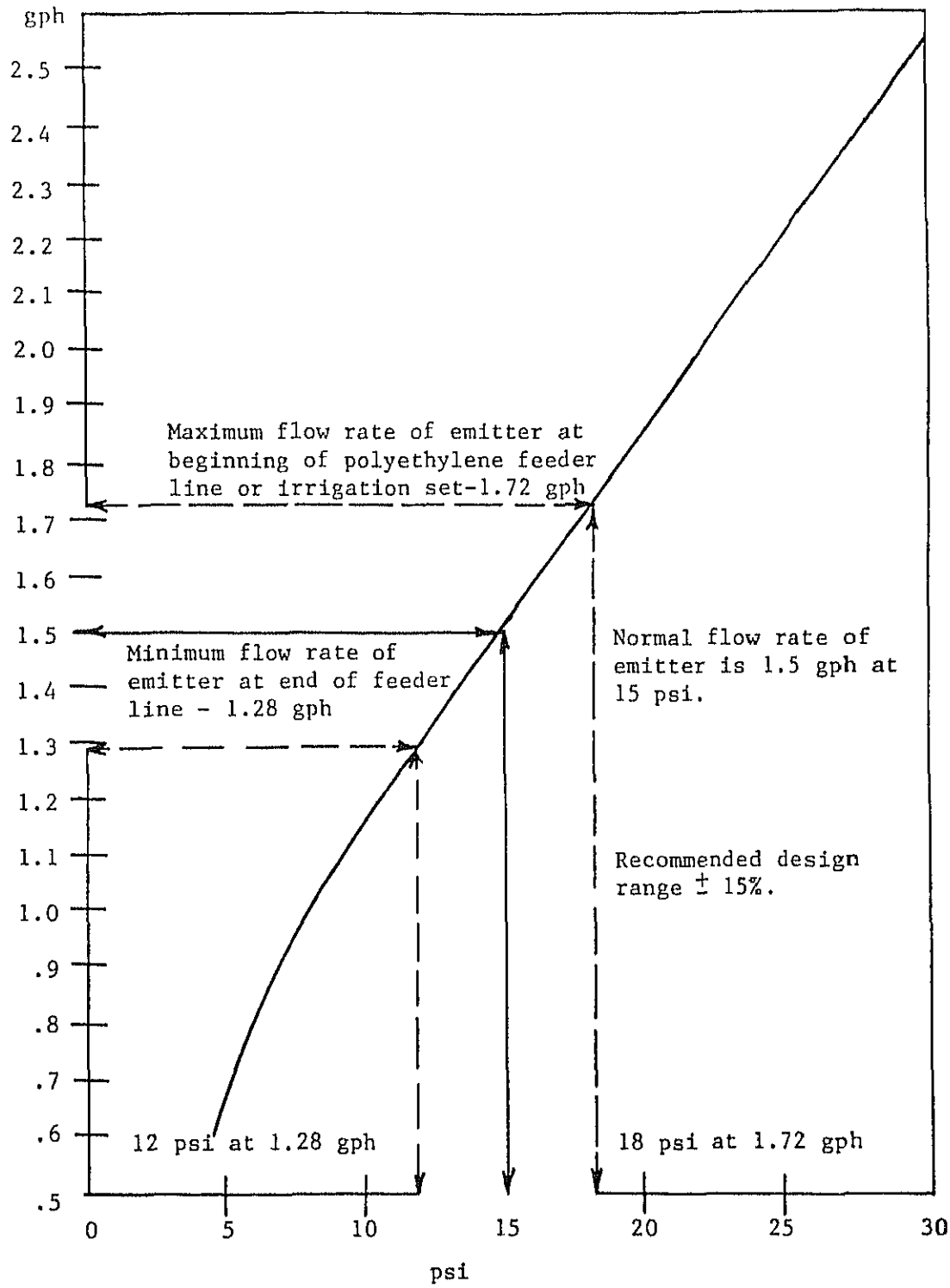


Figure WA685.94.2 - Typical Emitter Performance Curve for 1.5 gph Emitter

WA685.94.3

Table WA685.94.3
Water Application Per Plant (Gallons Per Day)

Plants/Acre		60	100	150	200	300	400	500	1,000	5,000
Sq Ft/Plant 100% Cover		720	433	290	218	145	110	87	43	8.7
* % Cover	Water Use Inch Day									
100%	0.03	13.6	8.2	5.4	4.1	2.7	2.0	1.6	0.82	0.16
	0.05	22.7	13.6	9.1	6.8	4.5	3.4	2.7	1.4	0.27
	0.08	36.2	21.7	14.5	10.8	7.2	5.4	4.3	2.2	0.43
	0.10	45.3	27.2	18.1	13.6	9.1	6.8	5.4	2.7	0.54
	0.15	68.0	40.8	27.2	20.4	13.6	10.2	8.2	4.1	0.82
	0.20	90.6	54.4	36.2	27.2	18.1	13.6	10.9	5.4	1.1
	0.25	113.0	68.0	45.3	34.0	22.7	17.0	13.6	6.8	1.4
	0.30	136.0	81.5	54.3	40.7	27.2	20.4	16.3	8.2	1.6
50%	0.03	6.8	4.1	2.7	2.0	1.3	1.0	0.8	0.41	0.08
	0.05	11.3	6.8	4.5	3.4	2.2	1.7	1.3	0.70	0.13
	0.08	18.1	10.8	7.2	5.4	3.6	2.7	2.1	1.1	0.21
	0.15	34.0	20.4	13.6	10.2	6.8	5.1	4.1	2.0	0.41
	0.20	45.3	27.2	18.1	13.6	9.0	6.8	5.4	2.7	0.54
	0.25	56.5	34.0	22.6	17.0	11.3	8.5	6.8	3.4	0.68
	0.30	68.0	40.7	27.1	20.3	13.6	10.2	5.1	4.1	0.81
25%	0.03	3.4	2.0	1.3	1.0	0.66	0.5	0.4	0.20	0.04
	0.05	5.6	3.4	2.3	1.7	1.1	0.85	0.66	0.035	0.07
	0.08	9.0	5.4	3.6	2.7	1.8	1.3	1.1	0.55	0.11
	0.10	11.3	6.8	4.5	3.4	2.3	1.7	1.4	0.68	0.14
	0.15	17.0	10.2	6.8	5.1	3.4	2.5	2.0	1.0	0.20
	0.20	22.7	13.6	9.0	6.8	4.5	3.4	2.7	1.3	0.27
	0.25	28.2	17.0	11.3	8.5	5.7	4.2	3.4	1.7	0.34
	0.30	35.0	20.4	13.6	10.2	6.8	5.1	4.1	2.0	0.41
10%	0.03	1.4	0.82	0.54	0.41	0.27	0.2	0.20	0.016	0.02
	0.05	2.3	1.4	0.91	0.68	0.45	0.034	0.027	0.14	0.03
	0.08	3.6	2.2	1.4	1.1	0.72	0.54	0.43	0.22	0.04
	0.10	4.5	2.7	1.8	1.4	0.91	0.68	0.54	0.27	0.05
	0.15	6.8	4.1	2.7	2.0	1.4	1.0	0.82	0.41	0.08
	0.20	9.1	5.4	3.6	2.7	1.8	1.4	1.1	0.54	0.11
	0.25	11.3	6.8	4.5	3.4	2.3	1.7	1.4	0.68	0.14
	0.30	13.6	8.2	5.4	4.1	2.7	2.0	1.6	0.82	0.16

*This is the area of ground covered by foliage to the drip line of the plant.

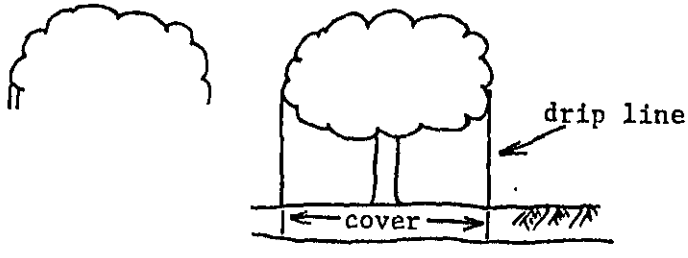
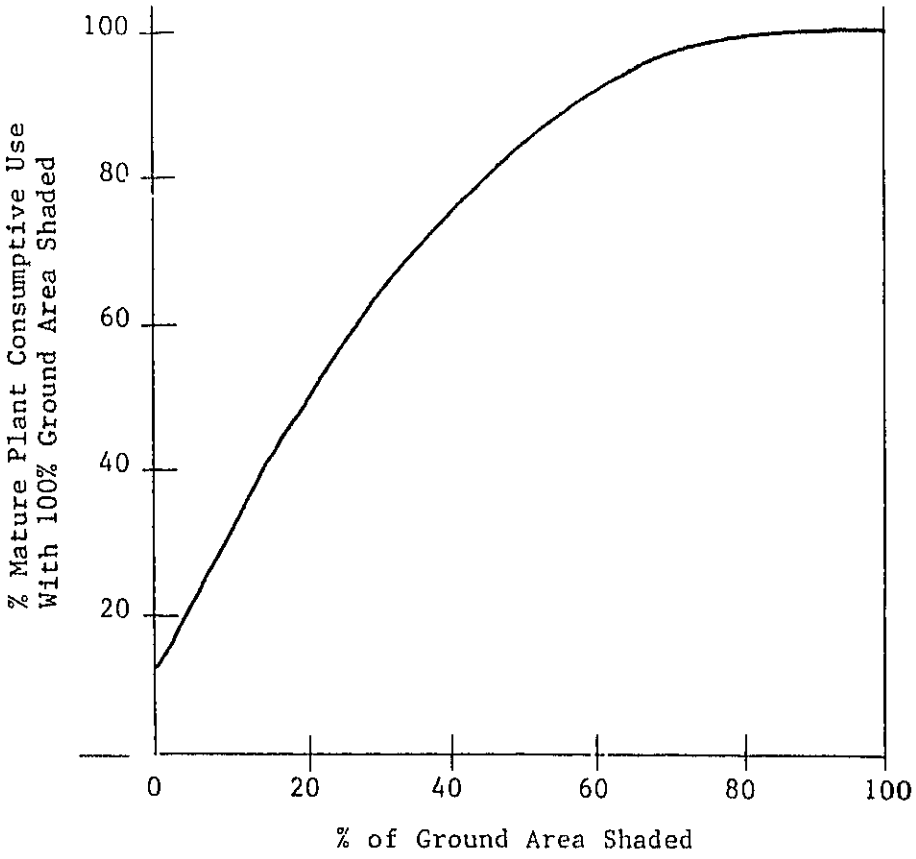


Figure WA685.94.4 - Consumptive Use Estimate for Immature Deciduous Plants Without Cover

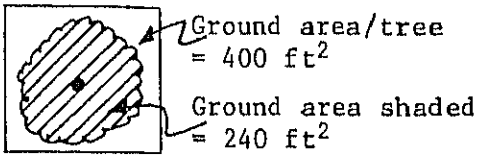


Example

Problem: Estimate consumptive (ET) use of an immature peach tree

Given: (1) Mature peach tree consumptive use is 7.5 inches for the month.

(2) Plan view of orchard:



Solution: From (2) above, percent of ground area shaded

$$\% \text{ ground area shaded} = \frac{\text{Area shaded}}{\text{Area/tree}} \times 100$$

$$= \frac{240}{400} \times 100$$

$$= \underline{60\%}$$

From figure, the percent of mature plant consumptive use is 92%

EST (immature) ET = ET (mature) x 0.92 (correction) = 7.5 x .92 = <u>6.9 in.</u>

WA685.94(e)

(e) In addition, one must determine the need for filters, pumps, settling basins, fertilizer injectors, chlorinators or acid injectors and lastly, tensiometers or other soil moisture checks. Time clocks may be desired for automatically starting or ending, and for irrigation sequencing. Not all systems will require all of this equipment.

WA985.95 Design criteria.

(a) Basic information needed.

(1) Topographic map including property dimensions, elevations.

(2) Tree or shrub spacing, row spacing and direction of rows.

(3) Future expansion of grower?

(4) Water, source, quality and quantity.

(5) Legal - will irrigation company deliver a trickle flow or will storage be needed?

(6) Soils.

(b) System design.

Net depth of application - $Fn = 1.604 \frac{QNTE}{Af}$

Where: Fn = net application depth in inches per day.

Q = discharge rate in gallons per hour per emitter or per foot of tubing.

N = number of mechanical outlets or total footage of tubing.

T = hours of operation per day. Do not exceed 18 hours per day with 15 hours generally suggested as the upper limit.

[illegible]rea served by n (number of emitters or).

E = field application efficiency expressed as a decimal. 75 to 90% efficiency may be used.

f = % of total area to be wetted as a decimal.

1.604 = Units conversion constant.

WA685.96 Design procedure and example.

(a) Typical simplified drip irrigation system design for an orchard. NEH, Section 15, Chapter 7, Trickle Irrigation, provides detailed design procedure.

Given: 40-acre apple orchard

100 trees to the acre spaced at 20' x 20'

Soils are medium textured

Topography is flat

Water use is 0.3 inch per day

The trees will be allowed to form a continuous hedge in one direction with a six-foot lane left open in the other direction for access reasons.

Step 1: Mechanical outlet (emitter) design (using table WA685.94.3)

Number need - This is dependent on the size of the tree and the soil type. The tree spacing is 20' x 20' with a 6' lane left open. The area expected to be covered by the tree is therefore 20' x 14' = 280 sq. ft. The rule of thumb is that 40 percent of this area must be covered by water from emitters to keep an adequate root system alive. 280 sq. ft. x 40% = 112 sq. ft. needed.

The soils are medium textured so the expected lateral movement of water is 4-5. See the text for expected lateral movement in different soils. Four feet will be used for this example. Four feet is the radius of the circle so an 8-foot diameter circle will be covered by water for each emitter used. Each emitter will then cover $\pi(8)^2/4 = 50.2$ sq. ft. of area. 112 sq. ft. of area is needed. 112/50.2 = 2+ emitters. Use 3 emitters per tree.

Size of emitters in gallons per hour. From Table WA685.94.3 determine the net gallons of water needed per tree per day.

Tree spacing = 20' x 20' - 400 sq. ft. per tree. The area covered by the tree is 280 sq. ft. as shown in the calculation shown above.

280 / 400 = 0.7 or 70% cover

Using 0.3 in. water per day and interpolating between the 100 percent cover and the 50 percent cover for 100 trees per acre in table WA685.94.3, we need 57 gallons peak net water use per tree per day.

Water is to be applied a maximum of 18 hours daily to allow for catch-up time in the event of system failures.

$\frac{57}{15}$ = 3.8 minimum gallons per hour net @ 90% efficiency

$\frac{3.8}{.9}$ = 4.2 gph gross

4.2 / 3 emitters needed = 1.4 gph per emitter.

Since emitters come in 1.0 and 1.5 gph sizes, select the 1.5 gph emitter.

This will supply 1.5 x 3 = 4.5 gph per tree. 63 gallons per tree gross (57/.90 eff.) per day divided by 4.5 gallons per tree per hour = 14 hours maximum operating time needed per day in peak consumptive use time. A longer time would be specified if salts are a problem.

Type of emitter - Since the orchard is flat, pressure compensation emitters are not needed. Any 1.5 gph emitter manufactured by reputable irrigation company will do the job. Pressure compensating emitters need to be considered when fall exceeds ± 1 percent.

Step 2: Polyethylene (PE) feeder line design.

Assume a pressure regulator is set on the riser from the mainline next to the feeder line. See Figure WA685.92.1 (the pressure regulator is set on the riser to the feeder line. Generally ± 15 percent of the flow rate is absorbed between the first emitter downstream from the pressure regulator (Tree C) and the last emitter on the line when there is no elevation difference.

1.5 gph + 15% = 1.5 + .22 = 1.72 gph max flow rate

1.5 gph - 15% = 1.5 - .22 = 1.28 gph min flow rate

From Figure WA685.94.2, emitter performance curve, we find pressure of 18 psi needed to get 1.72 gph, and a pressure of 12 psi needed to get 1.28 gph; therefore, 18 - 12 = 6 psi pressure loss available in the polyethylene feeder line--the pressure regulator set on the riser at the main line should be set at 18 psi. From Table WA685.96.2, polyethylene friction table, the number of trees that can be placed on one feeder line can now be determined. The one-half inch polyethylene line is most often used. It is kept in stock by most drip irrigation companies.

The flow rate is 4.5 gph per tree. The first friction loss (J) given is for 5 gph. Friction losses up to 5 gph can be assumed to be negligible. Tree spacing is 20 feet. The polyethylene line length is 20 feet + 5 percent slack so the emitters won't move. The length of polyethylene between each tree is then 20 feet + 5 percent of 20 = 21 ft. the friction losses in the table are for 100 feet of polyethylene. multiply figures (J) in the table by 21 ÷ 100 to get the pressure loss between trees. For 18 gph, the friction loss factor (J) is .22 ft. loss for the 21 feet of PE between the 4th and 5th trees. (4 x 4.5 gph per tree = 18 gph) continue this procedure for 22.5 gph (4.5 gph per tree x 5 trees) etc., until the 6 psi maximum accumulated loss is reached by adding these "between tree" losses together; that would then be the total number of trees allowed on one-half inch polyethylene feeder line.

A much quicker method of determining total accumulated lateral loss is to enter table WA685.96.2 with total lateral beginning flow and obtain friction loss factor (J) in ft/100 ft. multiply this factor (J) times total lateral length (including contraction-expansion allowance), times multiple outlet factor (F) (Table WA685.96.1) to obtain total lateral friction loss in feet.

Number (N)	F
1	1.0
2	0.65
3	0.55
4	0.50
5	0.47
6	0.45
7	0.44
8	0.43
9	0.42
10-11	0.41
12-15	0.40
16-20	0.39
21-30	0.38
31-70	0.37
> 70	0.36

Table WA685.96.1 - Multiple Outlet Factor F

WA685.96.2

Table WA685.96.2 - Polyethylene Tubing Friction Loss

1/2" Tubing ID = 0.580 in		3/4" Tubing ID = 0.800 in	
Flow GPH	J ft/100 ft	Flow GPH	J ft/100 ft
5	0.02*	10	0.02
10	0.08	20	0.06
15	0.16	30	0.11
20	0.26	40	0.19
25	0.38	50	0.28
30	0.53	60	0.38
35	0.69	70	0.50
40	0.87	80	0.64
45	1.07	90	0.78
50	1.28	100	0.94
55	1.52	110	1.11
60	1.77	120	1.29
65	2.03	130	1.49
70	2.32	140	1.69
75	2.61	150	1.91
80	2.93	160	2.14
85	3.25	170	2.38
90	3.60	180	2.63
95	3.95	190	2.89
100	4.32	200	3.16
110	5.11	210	3.44
120	5.95	220	3.73
130	6.84	230	4.03
140	7.79	240	4.34
150	8.79	250	4.66
160	9.84	260	5.00
170	10.94	270	5.34
180	12.09	280	5.69
190	13.29	290	6.04
200	14.54	300	6.42
210	15.84	310	6.80
220	17.18	320	7.18
230	18.57	330	7.58
240	20.00	340	7.99
250	21.49	350	8.40
		360	8.83
		370	9.26
		380	9.71
		390	10.16
		400	10.62
		410	11.09
		420	11.56
		430	12.05
		440	12.54
		450	13.05
		460	13.56
		470	14.08
		480	14.61
		490	15.14
		500	15.69

NOTE: Based on equation $J = \frac{0.133\ Q^{1.75}}{ID^{4.75}}$

Where: J = Friction loss of tubing - ft/100 ft
Q = Flow rate = gpm
ID = Inside diameter of tubing = inches
GPH = Gallons/hour (in table)

* Friction Loss - ft/100 ft

Step 3: Size the main lines--the buried plastic high-pressure lines.

Layout the system to use the longest polyethylene feeder lines practical (as determined in Step 2). This will give the shortest length of main line and the least number of fittings. This will reduce material and installation costs. Standard friction tables are contained in Part WA692. Other tables are available in the SCS Engineering Field Manual and from the manufacturers of plastic pipe. These tables can be used to determine friction losses in the main lines and fittings.

Step 4: Determine the pump size needed.

100 trees per acre times 40 acres = 4000 trees. 4000 trees x 3 emitters per tree = 12,000 emitters. 12,000 emitters @ 1.5 gph per emitter = 18,000 gph. 18,000 gph / 60 = 300 gpm pump capacity needed to operate the entire 40 acres orchard at one time for 14 hours during the peak use period. The head to pump against is determined as follows: 18 psi is needed at the pressure regulator on the polyethylene feeder line. Add friction losses in the main line and fittings to this. Add 5-10 psi for losses through the filters according to the manufacturer's literature.

Add losses through the flow meter, gate valves, etc. . .

Step 5: Determine the filter size needed.

The manufacturer's data should be used for this step. The quality of the water in this example dictates that a sand filter will be backed up by a screen filter. The manufacturer's literature suggests a 20 gpm capacity per sq. ft. of sand filter. 300 gpm = 15 sq. ft. filter area needed. Two 36-inch diameter tanks will be used. Consult the manufacturer's recommendations for the screen filter.

Step 6: Design all other equipment needed in accordance with good engineering practice and the manufacturer's literature. Include as needed: a chlorinator, check valves, pressure relief valves, combination air-vacuum valves, fertilizer injectors, flow meters. non-vibratory coupling and gage valves.

WA685.97 Layout.

(a) Polyethylene or similar material is used for the feeder lines. The size varies from smaller than 3/8" to 1" in diameter. The most common size used is the 1/2-inch, which is 15 millimeters or 0.580-inch inside diameter. Care must be taken to specify that this material be recognized drip line polyethylene tubing. Not all polyethylene will withstand the variation in temperature required for above-ground installation and may rapidly deteriorate.

(b) Five-percent slack is left in the feeder line so temperature variations will not pull the mechanical outlets away from their initial resting place. In a sprinkler conversion, after a short period of time, tree roots die out in unwatered areas and develop more strongly in the area of the mechanical outlet. Later moving this outlet may kill the tree.

(c) The feeder lines, when laid above ground, should be placed so that equipment will not need to run over the lines. Picking of fruit will need to be done so boxes or other equipment will not be dragged across feeder lines.

(d) The feeder lines are connected to buried main lines and laterals through risers, flexible PVC, or other acceptable means. Pressure regulators can be installed on each riser to reduce pressure from the main line to that needed on the feeder line. This allows the full ± 15 percent flow rate pressure loss to be absorbed in the feeder line. An alternate method of design puts a pressure regulator in the main line just upstream of a stretch of main line connected to several feeder lines. In this case, the ± 15 percent flow rate pressure loss is absorbed in the main line plus the feeder lines. the advantage of the pressure regulator on each feeder line is the ease of design and closer adherence to allowed pressure loss. The advantage of the other system is the smaller number of pressure regulators required which relates to cost and durability of equipment (see Figure WA685.92.1).

WA685.98 Component Criteria and Considerations

(a) Laterals and main lines: These normally constructed of polyvinyl chloride (PVC) and must be installed in accordance with good engineering practice. Gate valves are used to isolate sections of the system in case shutdowns are needed to repair breaks or perform other maintenance.

(b) Filters, separators and screens: These devices are sometimes used in combinations. For instance, a sand separator may be used in very dirty water, backed up by a screen. Sometimes a screen is used downstream from a sand filter in case of failure of the sand filter. Five to 15 psi pressure loss can be expected across.

(1) Sand separators. These are generally associated with the removal of sand particles where an exceptionally dirty water supply is used. They can remove particulate matter (200 mesh) when the material is heavier than water. Although an inexpensive filtration system, they are not affective in removing algae, trash, and silt that tend to plug system outlets.

(2) Screen filters. 20-mesh to 200-mesh screen assemblies are available to remove sediment and other foreign material. Industry has automatic self flushing and cleaning devices available. These screen assemblies will remove sand, debris, organic material, some minerals, and some silt. They are not effective in removing algae spores.

(WA210-VI-WAIG, OCTOBER 1985)

(3) Sand filter. Looks much like a swimming pool sand filter. Normal design provides 1 sq. ft. of filter area to 20 gpm system capacity. For dirty water, this may go to 1 sq. ft. to 15 gpm. Sand filters can be automated to self clean when there is a 5 to 10 psi differential across the filter. At least two filters in series are required to allow for flushing to alternate between filters and assure that water delivery is still being filtered. The total number of filters is regulated by system flow requirements and the size of filters available.

(c) Pumps: The vertical turbine or centrifugal are most commonly used. The centrifugal has the advantage of lower initial cost and easier installation. The vertical turbine pump has longer life and a lower operating cost. The vertical turbine can operate in a wider range of pressures and water supply without injuring the pump. It is recommended that the system be designed for continuous operation during peak use. This avoids extra demand changes that would exist if it ws desigend for only 12 to 18 hours of operation per day. Automatic pump controls should be used to protect the pump from hazards, such as electricity cutoff (for electric motor drive), and cutoff of water supply.

(d) Settling basin: Drip systems are often installed where traditional surface irrigation systems have been used. It is sometimes necessary to install a settling basin to remove trash, debris, and an especially heavy silt load. This basin can also be used as a regulating reservoir to insure a good match between incoming water supplies and the pump. A trash screen may suffice instead of the settling basin.

(e) Fertilizer injectors or pumps: There are several types on the market including flow meter, metering pump, and others. These should all be installed upstream of the filters so unfiltered fertilizer will not plug the feeder lines and emitters.

(f) Chlorinator and acid injector: These are optional depending on the quality of water used. Research data still in the experimental stage indicates that where needed, chlorine injected at 1 ppm residual on a continuous basis and intermittent applications of 10 ppm residual chlorine for 20 minutes daily lowered plugging counts for an 8-day period. Acid solutions are used to lower ph to the neutral range to make the chlorine more effective. This is done because acid is relatively cheap while chlorine is expensive. Acid has also been used successfully to reclaim flush-type emitters that were plugged with a slime matrix and suspended material. This acid was also used to reclaim emitters blocked with carbonate residue.

(g) Tensiometers or other soil moisture check: Tensiometers, neutron probes, soil moisture blocks should be used to check the soil moisture condition. Normally, a check is made at a depth where the main root concentration is found. A second soil moisture check is made below the main root zone. When water is reaching this area, the irrigation should be stopped. For tree crops, tensiometers could be placed at 18-36" depth.

WA685.98.1

Table WA685.98.1 - Physical, Chemical, and Biological Factors Causing Plugging of Trickle Emitters

Physical (suspended solids)	Chemical (prescription)	Biological (bacteria/algae)
1. Organic	1. Calcium or magnesium carbonate	1. Filaments
a. Aquatic plants (phyto-plankton/algea)	2. Calcium sulfate	2. Slimes
b. Aquatic animals (zooplanton)	3. Heavy metal hydroxides, carbonates, silicates and sulfides	3. Microbial depositions
c. Bacteria	4. Fertilizers	a. Iron
d. Plastic particles	a. Phosphate	b. Sulfur
2. Inorganic	b. Aqueous ammonia	c. Manganese
a. Sand	c. Iron, zinc, copper, manganese	
b. Silt		
c. Clay		

Table WA685.98.2 - Plugging Potential of Irrigation Water Used in Trickle Systems

Type of Problem	Little	Some	Severe
Physical			
Suspended solids (maximum ppm)[a]	<50	50-100	>100
Chemical			
pH	<7.0	7.0-8.0	>8.0
Dissolved solids (maximum ppm)[a]	<500	500-2000	>2000
Manganese (maximum ppm)[a]	<0.1	0.1-1.5	>1.5
Iron (maximum ppm)[a]	<0.1	0.1-1.5	>1.5
Hydrogen sulfide (maximum ppm)[a]	<0.5	0.5-2.0	>2.0
Biological			
Bacteria populations (maximum no/ml)[b]	<10,000	10,000-50,000	>50,000

[a]Maximum measured concentration from a representative number of water samples using standard procedures for analysis.

[b]Maximum number of bacteria per milliliter can be obtained from portable field samplers and laboratory analysis. Bacterial populations do reflect increased algae and microbial nutrients.

Table WA685.98.3 - Composition and Classification of Irrigation Waters Used in Trickle Systems*

Type of Source	Physical	Chemical (max. ppm)		Biological	Water Classification
	Suspended Solids (max. ppm)	Dissolved solids	Iron or Manganese	Bacteria Populations (max no/ml)	Physical/ Chemical/ Biological
City water	<1	500	0.05	<10	0-4-0
Runoff water	300	50	0.05	10,000	10-0-6
River water	70	900	0.10	4,000	6-8-4
Well water	1	1650	0.05	40,000	0-10-9

*Physical and bacteriological composition of waters changed with the seasons so that only the highest representative values are used in the table.

SUBPART J - CONTOUR DITCH

WA685.102(a)

WA685.100 Description.

(a) Contour ditch irrigation is a form of controlled surface flooding, where the irrigation water is distributed from ditches running across the slope approximately on the contour. Water is discharged through siphon tubes, controlled openings in the ditch bank or over a uniformly-graded lower lip of the ditch. Water flows, unconfined, down the slope from one contour ditch to the next, where it is collected and re-distributed. The spacing between contour ditches is governed by surface topography, soil intake rate, and the average net irrigation application.

(b) This method is suitable for irrigating all close-growing, non-cultivated crops except those grown in ponded water. Uniformly graded and smooth soils, with low permeability, permit the widest ditch spacing and highest efficiencies for low net irrigations. Coarse-textured soils require close ditch spacing and produce applications of lower efficiencies.

(c) Contour ditches are seldom used on slopes of less than one percent, however it is suitable to slopes ranging from 0.5 to 15 percent based on soil texture. Slopes on coarse-textured soils should not exceed six percent. Only sod farming crops should be considered for slopes over 4 percent.

(d) This method of irrigation has the lowest installation costs for all application methods.

WA685.101 Design limitations.

Under the best of conditions, irrigation efficiencies of 40 to 50 percent will seldom be exceeded.

WA685.102 Design concepts.

(a) Tables WA685.102.1 and WA685.102.2 provide data on maximum length of run, average irrigation time and recommended efficiencies for contour ditch irrigation design. Moderately-smooth topography was selected as representative of most areas, but criteria for very-smooth topography can be used where applicable. Land smoothing will provide better distribution.

WA685.102(b)

(b) The most frequently encountered problem with contour ditch irrigation is maintaining adequate spread for the length of run. Average of field evaluations indicate one cfs will spread over a width of approximately 100 feet.

(c) Example 1 - contour ditch irrigation design.

Given: Intake family (I'f) = 1.0
Crop = small grain
Slope = 3 percent with moderately-smooth topography
Net irrigation (F_n) = 3.0 inches

Find: Maximum length of run
Irrigation time
Recommended irrigation efficiency
Gross application
Spreading width (w) to cover one acre
Flow required to make gross application
Flow per 100 feet of width

Solution: Maximum length of run:
from Table WA685.102.1, read 175 feet

Irrigation time:
from Table WA685.102.1, read 3.2 hours

Recommended irrigation efficiency:
from Table WA685.102.2, read 40 percent

Gross application:

$$F_g = \frac{Fn \times 100}{eff.} = \frac{3.0 \times 100}{40} = 7.5 \text{ inches}$$

Spreading width (w) to cover one acre:

Length x width = 43,560 sq.ft (1 acre) therefore w = 43560/L
w = 43560/175 = 250 feet

Flow required to make gross application:

$$Q = \frac{F_g}{t} = \frac{7.5}{3.2} = 2.34 \text{ in/hr, or } 2.34 \text{ cfs}$$

(1 cfs for 24 hrs.= 2 Ac/Ft 1 cfs = 1 In./Hr)

Flow per 100 feet of width:

Q per 100 feet = Q/(w/100) = 2.34/2.5 = 0.94 cfs/100 ft. of width

This is under the general limit of 1 cfs/100 ft of width
If this is exceeded then reduce the depth of application and reevaluate.

(d) Example 2 - contour ditch irrigation design.

Given: Same conditions as example 1, and:

field length = 300 ft
stream size = 5 cfs

Find: Length of run
Stream size per 100 feet of width
Total irrigation width

Solution: The recommended maximum length of run is 175 feet. Two equal runs of 150 feet should therefore be used:

Stream size per 100 ft of width

$150\ w = 43{,}560 \qquad w = 290$ ft

$$Q = \frac{2.34}{2.9} = 0.81 \text{ cfs per 100 ft of width}$$
(less than 1 cfs/100 ft. of width)

Total irrigation width

$$w_t = \frac{5.0 \times 100}{0.81} = 617 \text{ ft, use } 620 \text{ ft}$$

(e) Adjustments may be made in flow, time, length of run, etc., to fit field conditions, but the guide recommendations are reasonably reliable and only minor adjustments are advisable.

(TABLES FOLLOW)

Table WA685.102.1
Contour Ditch Spacing and Average Irrigation Time
Unit Width Stream 0.01 c.f.s./ft.

Intake Family	Net Irrig. Appl. Inches	Approx. Irrig. Time	Ditch Spacing - (Feet) Slope Groups									
			1% to 2%		2% to 4%		4% to 8%		8% to 16%		16% to 32%	
			MST*	VST	MST	VST	MST	VST	MST	VST	MST	VST
0.1	1	4.9 hr	250	500	175	300	125	200	90	150	60	100
	2	15 hrs	250	500	175	300	125	200	90	150	60	100
	3	31 hrs	250	500	175	300	125	200	90	150	60	100
	4	50 hrs	250	500	175	300	125	200	90	150	60	100
0.3	1	3.6 hr	250	440	175	300	125	200	90	150	60	100
	2	5.1 hr	250	500	175	300	125	200	90	150	60	100
	3	8.2 hr	250	500	175	300	125	200	90	150	60	100
	4	12 hrs	250	500	175	300	125	200	90	150	60	100
	5	16 hrs	250	500	175	300	125	200	90	150	60	100
	6	20 hrs	250	500	175	300	125	200	90	150	60	100
0.5	1	2.2 hr	250	330	175	300	125	200	90	150	60	100
	2	4.3 hr	250	420	175	300	125	200	90	150	60	100
	3	6.6 hr	250	490	175	300	125	200	90	150	60	100
	4	7.1 hr	250	500	175	300	125	200	90	150	60	100
	5	9.1 hr	250	500	175	300	125	200	90	150	60	100
	6	11 hrs	250	500	175	300	125	200	90	150	60	100
1.0	1	1.2 hr	175	175	175	185	125	200	90	150	60	100
	2	2.1 hr	215	215	175	225	125	200	90	150	60	100
	3	3.2 hr	250	250	175	260	125	200	90	150	60	100
	4	4.4 hr	250	275	175	290	125	200	90	150	60	100
	5	5.7 hr	250	305	175	300	125	200	90	150	60	100
	6	7.0 hr	250	330	175	300	125	200	90	150	60	100
>1.0	1	40 min	100	100	105	105	110	110	90	120	60	100
	2	1.2 hr	115	115	125	125	125	130	90	135	60	100
	3	1.7 hr	130	130	135	135	125	145	90	150	60	100
	4	2.3 hr	145	145	150	150	125	160	90	150	60	100
	5	2.9 hr	155	155	165	165	125	170	90	150	60	100
	6	3.5 hr	170	170	175	175	125	180	90	150	60	100

MST Moderately Smooth Topography - Contours are essentially parallel and cross slope is not more than 1/4 the general down field slope. No rolls, dikes or furrows are present.

VST Very Smooth Topography - Contours are very smooth and nearly parallel, and cross slopes do not exceed 0.1%. All minor irregularities have been removed.

(WA210-VI-WAIG, OCTOBER 1985)

Table WA685.102.2
Recommended Design Efficiencies for Contour Ditch Irrigation

LAND SLOPE %	DESIGN SLOPE %	INTAKE FAMILY 0.1	0.3	0.5	1.0
0.0 - 0.10	0.10	40	40	45	50
0.11 - 0.25	0.20	40	40	45	50
0.26 - 0.50	0.40	40	40	45	50
0.51 - 1.00	0.75	40	40	45	50
1.01 - 2.00	1.50	35	35	40	40
2.01 - 4.00	3.00	35	35	40	40
4.01 - 6.00	5.00	30	30	30	30
6.01 - 9.00	7.50	30	30	30	30
9.01 -15.00	11.0	30	30	30	30

SUBPART K - TRAVELING (SINGLE-NOZZLE) SPRINKLER

WA685.110 Description.

(a) The traveling sprinkler is a high-capacity single-nozzle sprinkler fed with water by a flexible hose. It is mounted on a 4-wheel self-powered unit and travels along a straight line while watering. The unit is equipped with a water piston or turbine-powered winch that reels in an anchored cable. The cable guides the unit along a path as it tows a high-pressure flexible lay-flat hose which is connected to the water supply system. The typical hose is 4-inches in diameter and generally 660-ft long, which allows the unit to travel 1320 ft. After use, the hose can be drained, flattened, and wound onto a reel. Some new systems move by reeling in the hose as it travels.

(b) Pressure can be supplied either from the supply pipeline system, or the traveling unit may have a self-contained pumping plant mounted on the unit itself, pumping from an open ditch.

(c) As the traveler moves along its path, the sprinkler wets a strip of land 200-400 feet wide rather than the circular area wetted by a stationary sprinkler. After the unit reaches the end of a travel path, it is moved and set up to water an adjacent strip of land. The overlap of adjacent strips depends on the distance between travel paths and the diameter wetted by the sprinkler.

(d) Traveling sprinklers require the highest pressures of any system. In addition to the 80-100 psi pressure required at the sprinkler nozzle, hose losses can add another 20-40 psi to the required system pressure (TDH). They are best suited for supplemental irrigation where seasonal irrigation requirements are small, thus mitigating the high power costs associated with high-operating pressure. An energy cost evaluation should be made.

(e) Traveling sprinklers are well adapted to high field crops, such as corn.

WA685.111 Limitations.

(a) Traveling "big-gun" sprinklers are generally suited to only relatively high-intake soils. The actual application rate from full circle traveling-gun sprinklers ranges from about 0.3 in/hr for nozzles discharging in the neighborhood of 300 gpm, to 0.6 in/hr for 1000 gpm units. Where infiltration of the soil surface is expected to be a problem, a larger number of lower discharge sprinklers is recommended over fewer larger units.

WA685.111(b)

(b) The end-pull power requirements to drag a hose depends on the soil texture, soil moisture conditions, hose length, hose diameter, and crop cover. Pull requirement is greatest on wet, bare, sticky soils, and less on wet vegetation or on bare sandy soils. On sticky soils, the towpaths for the traveling unit and hose
should be left in grass or other vegetation.

WA685.112 Design procedures.

(a) Use of Exhibit WA685.112.4 along with the included tables provide for checking and designing a traveling sprinkler. Sprinkler, Chapter 11, NEH-15 contains full design details.

(b) Table WA685.112.1 shows recommended towpath spacings for traveling sprinklers with ring (lower) and tapered (higher) percentage nozzles. Table WA685.112.2 shows estimated head loss for lay-flat irrigation hose operating at approximately 100 psi. The diameter of lay-flat hose increases by almost 10% under normal operating pressures. This gives the lay-flat hose about 20% more carrying capacity than the same nominal diameter rigid plastic hose (at the same friction loss gradient).

(c) Design elements that are needed to design or check a design are:

(1) Application rate of the system to verify it does not exceed the sprinkler intake rate (iph - Appendix A) of the soil.

(i) Traveling Sprinkler - $It = \frac{13,623.7 \times q}{r^2 \times Deg.}$

Where It = approximate application rate from a traveling sprinkler (iph)
q = sprinkler discharge (gpm)
r = wetted radius of nozzle (ft)
Deg.* = portion of circle receiving water (degrees)
*Deg. usually does not exceed 270 so as to keep the travel path of the system dry.

(ii) Stationary Sprinkler - $I = \frac{30.7}{r^2} \times q$ where I = application rate from a stationary sprinkler (iph)

(2) Application depth of the system to verify needed water volume being applied is adequate to meet the soil deficit and not producing deep percolation.

(i) Traveling sprinkler $Fn = \frac{1.605\ q}{WS} \times Eff.$

Where Fn = net depth of application (inches)
W = tow path spacsing (ft)
S = travel speed (ft/min)
Eff = system efficiency (Part 684)

(ii) Stationary sprinkler - $Fn = \frac{q \times Hrs \times 96.3 \times Eff}{L \times Ws}$

Where Hrs = Hours of operation for the set (Hrs)
L = Length between sets (ft)
Ws = width between parallel sets (ft)

(d) The traveler unit is generally powered by water turbines, water pistons or engines. In determining system TDH requirements and net operating pressure at the nozzle, the pressure head loss and riser height of the traveler must be considered. Manufacturers should provide friction loss data for their travelers when operating at various flow rates and travel speeds. This loss can easily exceed 10 psi for turbine-drive travelers.

Table WA685.112.1 - Recommended towpath spacings for traveling sprinklers with ring (lower) and tapered (higher) percentage nozzles.

	Percent of Wetted Diameter						
	50	55	60	65	70	75	80
Sprinkler Wetted Diameter	Wind over 10 mph		Wind up to 10 mph		Wind up to 5 mph		No Wind
ft	ft	ft	ft	ft	ft	ft	ft
200	100	110	120	130	140	150	160
250	125	137	150	162	175	187	200
300	150	165	180	195	210	225	240
350	175	192	210	227	245	262	280
400	200	220	240	260	280	300	320
450	225	248	270	292	315	338	360
500	250	275	300	325	350	275	400
550	275	302	330	358	385	412	440
600	300	330	360	390	420	---	---

WA685.112.2.

Table WA685.112.2 - Estimated pressure head loss gradients for lay-flat irrigation hose operating at approximately 100 psi.

Flow Rate	Nominal Inside Diameter - Inch									
	2.5		3		4		4.5		5	
	Pressure Head Loss Gradient Per 100 ft of Hose									
gpm	psi	ft	psi	ft	psi	ft	psi	ft	psi	ft
100	1.6	3.7								
150	3.4	7.9	1.4	3.2						
200	5.6	12.9	2.4	5.5						
250			3.6	8.3	0.9	2.2				
300			5.1	11.8	1.3	3.1	0.6	1.4		
400					2.3	5.3	1.3	2.9		
500					3.5	8.1	2.1	4.8		
600					4.9	11.3	2.7	6.1	1.1	2.5
700							3.6	8.2	2.1	4.9
800							4.6	10.5	2.7	6.2
900									3.4	7.9
1000									4.2	9.7

Table WA685.112.3 - Typical Discharge and Wetted Diameters for Gun Sprinklers with 24° Angles of Trajectory and Tapered Nozzles Operating When There is no Wind

Sprinkler pressure	Tapered nozzle size (in)									
	0.8		1.0		1.2		1.4		1.6	
	Sprinkler discharge and wetted diameter									
psi	gpm	ft	gpm	ft	gpm	ft	gpm	ft	gpm	ft
60	143	285	225	325	330	365	—	—	—	—
70	155	300	245	340	355	380	480	435	—	—
80	165	310	260	355	380	395	515	455	675	480
90	175	320	275	365	405	410	545	470	715	495
100	185	330	290	375	425	420	575	480	755	510
110	195	340	305	385	445	430	605	490	790	520
120	205	350	320	395	465	440	630	500	825	535

Exhibit WA685.112.4 - Traveling Gun Design Worksheet

WA685.112.4

Resource Inventory for _____

Crops_____ By_____

Soils_____ Location_____

AWC to Rooting Depth of Crop_____in
Maximum Allowable Intake Rate_____in/hr
Net Moisture to be Applied _____in/irrigation
Peak Consumptive Use_____ in/day
Maximum Allowable Irrigation Frequency_____ days

Water Supply
Source _____
Amount Available _____gpm

Prevailing Wind
Design Speed _____mph
Direction_____

System Design

	No.__	No. __	No. __	No. __	No. __
Towpath Spacing, ft.					
Application Efficiency _____%					
Gross Application per Irrigation _____in					
Sprinkler Sets _____/day					
Operating Time _____hrs/day					
Minimum System Capacity_____gpm					
Sprinkler Selection					
Trial	No. 1	No. 2	No. 3	No. 4	No. 5
Sprinkler					
Nozzle Size					
Pressure, psi					
Discharge, gpm					
Diameter, ft.					
Sprinkler Arc,W, degrees					
Application Rate in/hr					
Allowable Spacing, ft					
Design Spacing, ft					
Design Applic, in					
Travel Speed, ft/min					
Towpath Length, ft					
Travel Time, hr					
Design Sets per Day					

Exhibit WA685.112.4 - Traveling Gun Design Worksheet (Continued)

WA685.112.4

Sets per Irrigation _____
Travel Required _____

Lateral Design

Hose Type _____(Lay Flat, Hard)
Length _____ft
Size_____in
Sprinkler Pressure _____psi
Riser Height _____ft/2.31 = _____psi
Friction Loss in Hose _____psi
Pressure Loss in Traveler _____psi
Elevation ± _____ft/2.31 = ± _____psi
Total Pressure Required at Riser _____psi

Mainline Design

Material _____, Length _____ft

Q GPM	Dia In	Length ft	H_f psi
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Total H_f = _____psi

Elevation ± _____ft/2.31 = ± _____psi

Total Mainline Pressure Loss = _____psi

Pumping Requirements

Pressure at Riser _____psi
Mainline Loss _____psi
Pumping Suction Loss _____psi
Miscellaneous Losses _____psi
Total Dynamic Head, TDH = _____psi
TDH x 2.31 = _____ft
Required Pump Performance is _____gpm at _____ft with suctic
lift of _____ft

WA685.113 Layout considerations.

National Engineering Handbook, Section 15, Chapter 11 (Rev.), part 11-84, reviews in detail planning concepts and system layouts for traveling sprinklers.

SUBPART L - FROST PROTECTION

WA685.200 Description.

Frost protection is used to protect against crop damage due to temperatures occurring below the freeze level of a crop. Frost damage can occur to a crop with temperatures as high as 32 degrees, while some tree fruits do not experience damage until temperatures fall to the low 20's. All forms of irrigation provide some level of protection as do wind machines, fires and smudge pots. Since the subject is irrigation, the later items will not be discussed as well as some forms of irrigation that have such little affect.

The most effective irrigation methods for frost protection are systems that discharge water into the atmosphere, such as sprinklers and trickle-spray systems. The effectiveness of each system is limited by the amount of area the system can cover, application rate of the system, water availability during frost period, drainability of the soil, and rotation speed of the sprinkler head.

Systems that are generally considered valid for frost protection, over a large area, are solid set sprinklers, either hand lines or permanent set, and trickle spray. The degree of protection each of these offers depends upon the weather circumstances that cause the damage.

WA685.201 Freeze methods.

(a) No Wind-Radiation Freeze: This freeze hazard generally occurs on a clear night with the passage of a cold front. Heat is lost from the surface of the earth by radiation with cold air forming near ground level. If there is no, or limited, air movement, the temperature decreases around the plant.

Solid set undertree and trickle-spray have been affective in protection against no wind-radiation freeze to a certain degree. This is accomplished by maintaining a warm ground surface by the heat transfer from the water to the atmosephere. These methods further aid in setting up minor air currents in the area of system operation. Air currents help mix the air and increase the temperature around the plant. This is the basic principle behind non irrigation methods.

(b) Wind Radiation Freeze: Cold air masses move into an area drastically lowering temperatures. The wind borne air masses are usually dry and strip away heat in a very short time. The same principle as wind chill factors affect humans and animals.

Overhead application on both low growing
effective in providing some degree of protection
is accomplished by the release of heat that occur
(heat of fusion) on the plant. Care is needed to
protected by this method can support the ice load

WA685.202 Principle of frost protection.

(a) Frost protection by applying water is effective because when water freezes on the sensitive plant parts, a considerable amount of heat is released to the plant from the freezing water. Figure WA685.202.1 shows the phase change from water at 32°F to ice at 32°F.

(b) When water is applied by sprinkler, it tends to reach the wet bulb temperature by the time the drops reach the plant. Droplet size has a significant effect on the change in water and air temperature. Small droplets almost always reach the plant at 32°F. Since the wet bulb temperature is usually below the freezing point during freeze protection periods very little, if any, sensible heat is obtained from the water for freeze protection. This is especially true with small droplet sizes below 3 mm. With large droplet sizes, warm water, and high application rates, sensible heat can be significant and helps protect the plant. However, the greatest benefit comes from the "heat of fusion" released when water at 32°F changes to ice at 32°F. When water changes to ice, 144 BTU's per pound of water are released to the surrounding area. The water-ice mixture will remain locked into the phase change as long as water is applied at a high enough rate to maintain the excess water in the mixture and the ice will remain at 32°F.

(c) Several problems are created when windy conditions exist during freeze protection by sprinklers. The heat required to evaporate a pound of water is about 7.5 times that of the heat of fusion released in the phase change from liquid to ice. Wind convects the heat away from the plant and greatly increases the heat lost by evaporation, Table WA685.203.1. Several times more water must be applied to overcome the evaporation loss caused by windy conditions. This should be considered in system design.

WA685.203 Design of frost protection.

Adequate drainage is required if sprinklers are to be used for frost protection. The amount of water applied to a field by several hours of operation each night for several consecutive nights must be successfully removed in order to prevent waterlogging of the soil. Crop damage can result from poor drainage that exceeds the damage that would have occurred from freeze damage if the water were not applied. The excess water leaches fertilizers and nutrients from the soil. Frequent applications of low concentrations of fertilizers during the growing season should be considered if freeze protection by sprinkling is required over a major part of the season.

(a) Under tree design: Little literature exists for the design or benefits of under tree frost protection from both solid set sprinklers and trickle spray. Producers have experienced benefits of 2° to 6°F temperature with application rates of 0.08 to 0.11 iph (35-45 gpm/acre) for low to no wind conditions.

WA685.202.1

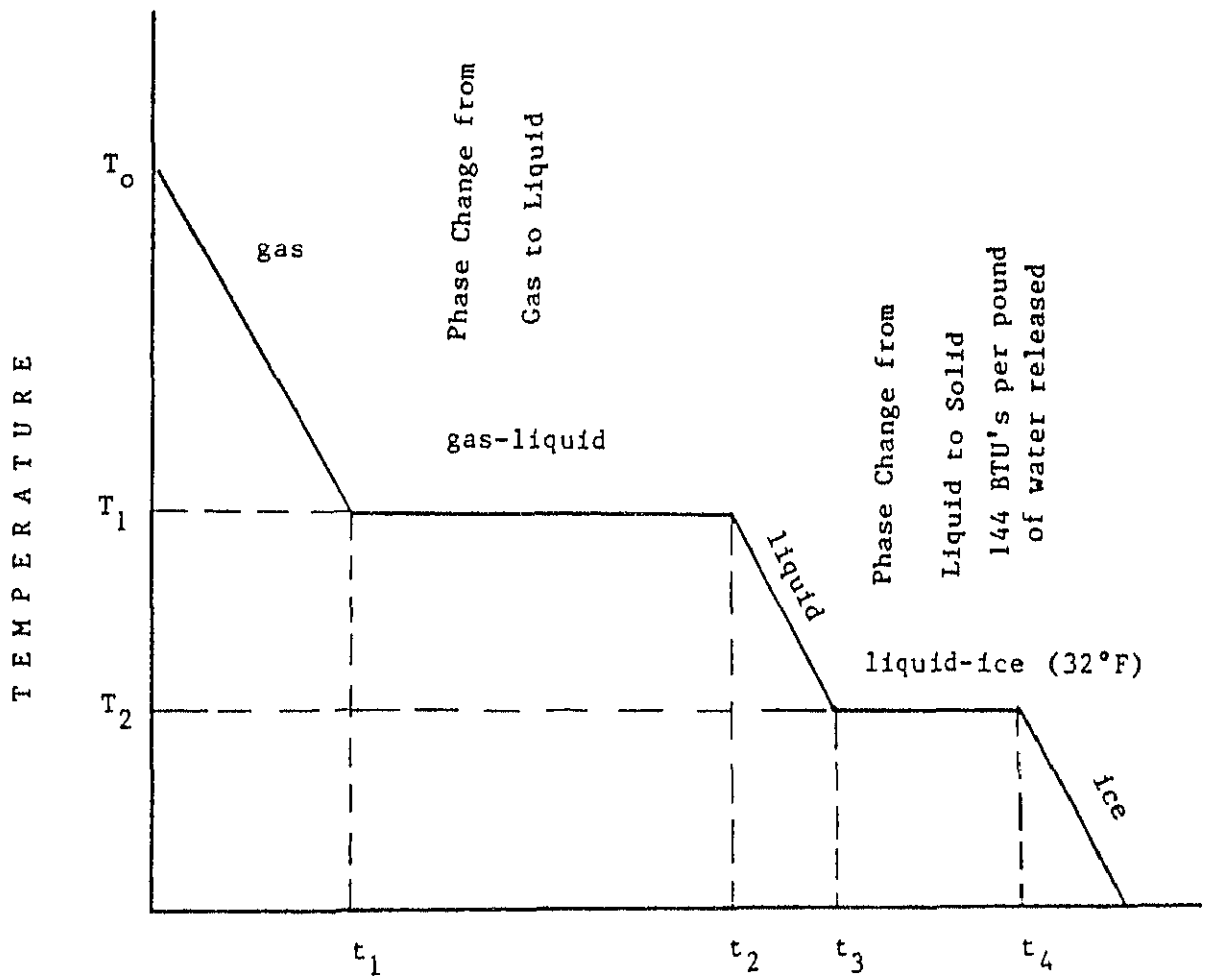


Figure WA685.202.1 - Cooling curve for water. During phase changes t_1-t_2 & t_2-t_3 energy is released without a change in sensible temperatures.

WA685-137

WA685.203(b)(1)

(b) Overhead design:

(1) Minimum application rates of 0.1 inches per hour have been effective for radiation freeze protection with low wind conditions down to a temperture of about 26°F. Application rates must be increased for lower temeratures and high wind conditions. Table WA685.203.1 lists application rates recommended.

Table WA685.203.1 - Recommended Sprinkler Application Rates for Various Wind and Temperature Conditions 1/

Minimum Temperature Expected	WIND SPEED IN M.P.H.		
	0 to 1	2 to 4	5 to 8
	Application Rate (iph)		
27°F	0.10	0.10	0.10
26°F	0.10	0.10	0.14
24°F	0.10	0.16	0.3
22°F	0.12	0.24	0.5
20°F	0.16	0.3	0.6
18°F	0.20	0.4	0.7
15°F	0.26	0.5	0.9

1/ Extension Circular 287, Florida Agricultural Extension Service, Gerber & Martsolf.

prinkler spacing design for various wind
is based on percentage of the wetted
pattern of the sprinkler.

ssure Sprinklers Lateral Spacing along mainline	High Pressure Sprinklers-- Diagonal Spacing
65	66
60	50
50	40
30	30

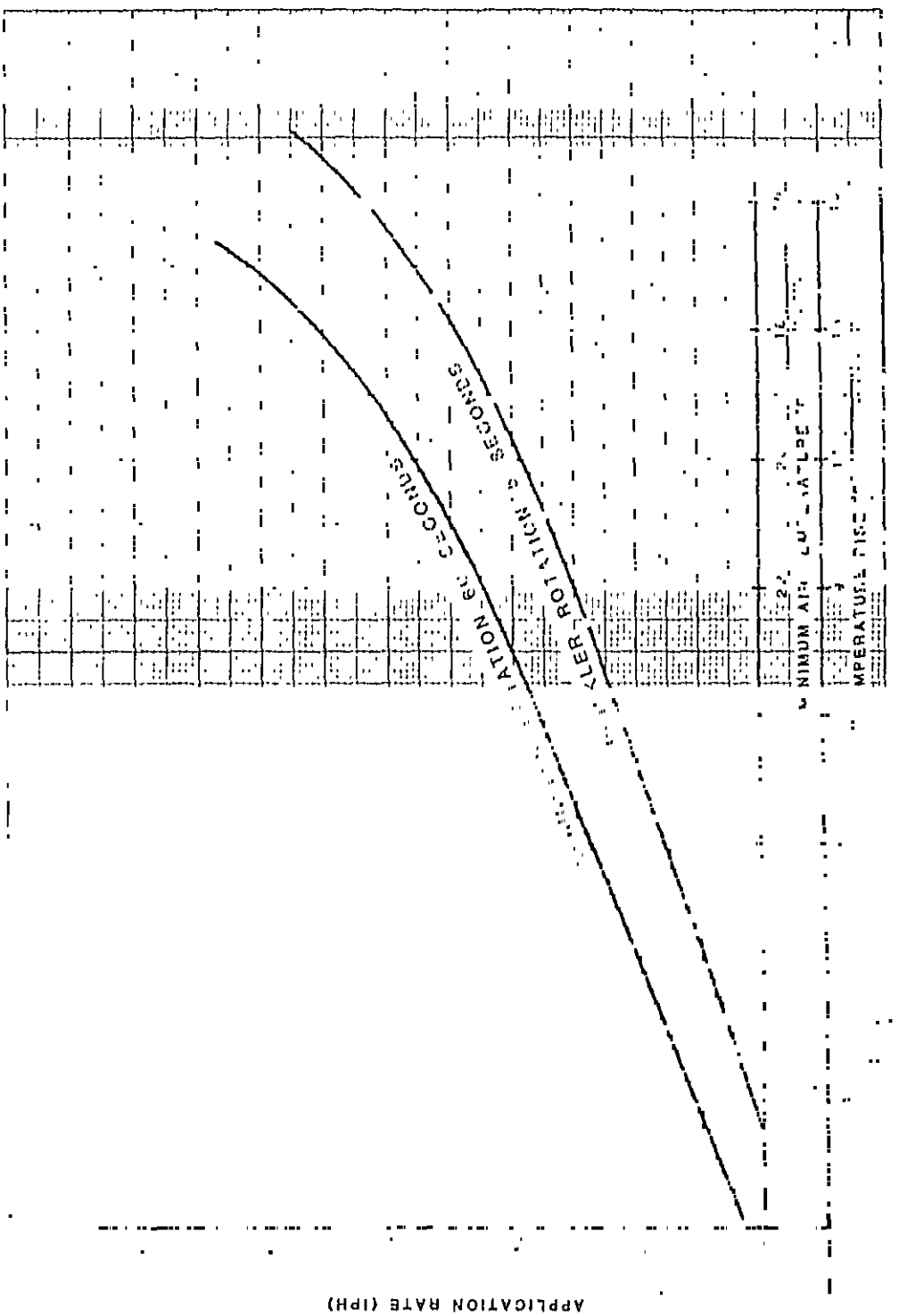


Figure WA685.203.3 - Effects of spraying frequency or sprinkler rotation and application rate on the rate of temperature rise and minimum temperature at the plant leaf surface to maintain a critical leaf temperature of 31°F. (no wind).

Table WA685.203.4 - Air temperature at which sprinkler systems should be turned on to prevent a rapid temperature drop below the critical temperature for freeze damage. In order to maintain wet-bulb temperatures above the critical temperature for various ranges in dewpoint temperature, turn on the sprinklers at or above the indicated air temperature.

Critical Temperature (°F)	Dewpoint Temperature Range (°F)	Minimum Turn-on or Turn-off Air Temperature (°F) 1/
32	3 to 10	45
	10 to 16	43
	16 to 21	41
	21 to 24	39
	24 to 28	37
	28 to 31	35
	31 to 32	33
30	0 to 9	42
	9 to 15	41
	15 to 20	38
	20 to 24	36
	27 to 30	32
28	0 to 8	39
	8 to 14	37
	14 to 19	35
	19 to 23	33
	23 to 27	31
	27 to 28	29
26	0 to 10	35
	10 to 16	33
	16 to 20	31
	20 to 24	29
	24 to 25	27

1/ Absolute minimum temperature for turning on or off the irrigation system it is recommended that the system be turned on or off 2°F or 3°F higher than the indicated minimum.

Source: Dr. Richrd L. Snyder, Agricultureal Biometerorologist, Cooperative Extension Service, University of California, Davis, California

(2) Sprinklers should rotate at least one revolution per minute to keep plant parts from cooling below the freezing point before additional water is applied. Figure WA685.202.3 shows the relationship between application rate, temperature rise and minimum air temperatures for various spray frequencies needed to protect a plant leaf surface at 31°F. Note the increased efficiency of water with increased spray frequency.

(3) Many factors need to be considered in determining when to start up the system. Factors such as air temperature, wind velocity, dew point, and state of plant growth (Table WA685.207.1) must be considered in order to minimize crop damage, reduce the amount of water applied and minimize ice buildup (Table WA685.203.4). Because of the high heat required to evaporate water, when sprinklers operate in relatively dry air, high evaporation rates will occur from the water droplets and result in a rapid drop in air temperature. Water will evaporate into the air until the air becomes saturated and under low wind conditions, the air temperature will drop to the wet bulb temperature. Sprinklers should be turned on so that the wet bulb temperature is bove the critical temperature for freeze damage of the crop, usually 32°F. Wet bulb temperataures are not easy to measure below 32°F and are not generally available from the National Weather Service or local weather station. Table WA685.203.4 may be used to determine turn-on air temperatures using the dew point temperatures which are usually available. It is necessary to use dew point temperatures which depend on the moisture content of the air instead of wet bulb temperature or relative humidity which both vary with temperature.

(4) Sprinkler application rates for frost protection should be based on the temperature requirements of the crop and expected weather conditions (Table WA685.203.1). Droplet size and rotation speed must be considered in establishing the design application rate (Figure WA685.203.3).

WA685.204 Example:

Crop: Cranberries
Stage of growth: Blossom
Critical temperataure: 32°F
Dew point: 20°F
Minimum Expected Temperature: 26°F
Expected wind: 3 to 4 MPH

Find: Critical turn on temperature
Net application rate
Required gpm/acre

WA685.204

Solution: 1. Critical Turn-on Temperature (Table WA685.203.4)
With critical Temperature = 32°F
and Dew Point = 20°F read 41°F

2. Net Application Rate
a. From Table WA685.203.1 with minimum temperature = 26°F
and air movement (wind) = 3 to 4 MPH
read application rate (iph) = 0.30 in. per hour
b. Check Figure WA685.203.3
(normal sprinkler head rotation is once every 60 seconds)
read application (iph) = 0.14 in. per hour for no wind

Since there is a wind application rate = 0.30 iph

3. Approximate system capacity gpm/acre
gpm/acre = (Application Rate) x 452.3/Efficiency
AT Efficiency = 65% gpm/acre = 209 gpm (gross)
AT Efficiency = 70% gpm/acre = 194 gpm (gross)

Summary: For frost protection of the cranberries, approximately 1/ 194 to 209 gpm/acre would be needed. The system should be set to start operation at 41°F.

1/ Actual system capacity will be based on nozzle selection to provide the 0.30 iph net application at the proper efficiency and the ultimate number of sprinklers per acre.

WA685.205 Stopping frost protection.

Turning off the system can be more critical than when to turn it on. Heat is needed to melt the ice coating off the plant on the morning after a freeze night. Temperature of the plant may fall below 32°F if the sprinkler is turned off too soon, resulting in severe plant damages. Damage can be avoided by operating the sprinklers until the ice is melted or until the wet-bulb temperature is well above the melting point of 32°F. Table WA685.203.4 can also be used to determine the turn-off air temperature if the dew point temperature is known.

a. First determine the critical temperature for the crop stage of growth (Table WA685.207.1 for fruit trees) from grower experience if published data does not exist. Several publications exist through the Washington State Extension Service containing additional information on fruit trees. Critical temperatures vary with state of growth and variety. Find the dew point temperature range in the second column of Table WA685.203.4. The dew point range selected should correspond to the critical temperature for the crop stage. Finally, read the turn-off air temperature in the third column.

(b) With the example (WA685.204) turn-off temperature is determined to be 41°F. When the air temperature in the field has exceeded the turn-off temperature and the wet-bulb temperature is above 32°F, the system can be shut off.

WA685.206 Design considerations.

(a) Both plastic and metal sprinklers are used. Metal sprinklers seem to be preferred by growers.

(b) Under low temperature conditions, special frost sprinklers should be used with hooded springs and a special arm to reduce freeze up.

(c) Pressure variation along the lateral should not exceed 20 percent of the design operating pressure of the sprinklers for good uniformity.

(d) The water supply should be protected from materials that might clog the sprinkler nozzles and against sand and silt particles that may abrade the nozzle openings. Frequent checks should be made for proper sprinkler operation and any signs of nozzle clogging or wear. Systems should be checked out for proper operation prior to the time they are needed for freeze protection. Sprinkler failure of any kind can result in severe damage or loss of crop. It is essential that the freeze protection system be able to operate on a moments notice in case of a rapid change in weather conditions and be able to operate for hours without interruption.

(e) Single nozzle sprinklers are usually used to keep the amount of water applied to a minimum. Nozzle sizes range from one-sixteenth to three-sixteenths of an inch. Operating pressures usually range from 36 to 60 lb/in^2. Uniform application is important for good freeze protection, efficient application of irrigation water, and fertilizers applied through the sprinkler system. SCS practice standards for sprinkler systems requires that sprinkler spacing along the lateral not exceed 50 percent of the wetted diameter. When wind is a factor the sprinkler spacings should not exceed the values shown in Table WA685.203.2.

(f) Good surface and subsurface drainage is necessary to protect the crop against excess water applied for freeze protection.

(g) Where frost protection is practiced, heavy fall application of plant nutrients should be avoided to prevent their loss through runoff and deep percolation.

WA685.207 Summary.

Proper system design is critical to good freeze protection, efficient application of irrigation water, fertilizers and for crop cooling. The most critical need should determine the system design requirement (Table WA685.203.1). The uniformity coefficient should equal or
under actual operating conditions (Table WA685.203.2)
able to supply the needed quantity of water at the d

WA685.207

When properly designed and managed, sprinkler systems can provide adequate frost protection for many crops. The sprinkler system can also be used for efficient application of irrigation water, fertilizers, and chemicals. A scientific method of irrigation scheduling should be adopted to minimize crop stress during periods of low rainfall. Sprinkler systems also have the potential for controlling the environment of the crop during high temperataure periods. A properly designed sprinkler system will meet all the crop needs, be easy to operate, maintain and be an economic asset to the farm.

Table WA685.207.1 - Critical Stage Freeze Temperature
(Extracted from WA Extension Bulletin 0634)

APPLES: *For Red Delicious. Golden Delicious and Winesap approximately 1 degree hardier; Rome Beauty, 2 degrees hardier; except after petal fall, when all varieties are equally tender.

Bud Development Stage	Silver Tip	Green Tip	Half-Inch Green	Tight Cluster	First Pink	Full Pink	First Bloom	Full Bloom	Post Bloom
Ave. Temp. 10% kill	10	18	22	25	27	27	28	27	28
Ave. Temp. 90% kill	0	4	11	18	21	24	25	24	26

PEARS: *For Bartlett. Anjou is similar in hardness but may bloom earlier and therefore may be more tender than Bartlett at the same date.

Bud Development Stage	Scales Separating	Blossom Buds Exposed	Tight Cluster	First White	Full White	First Bloom	Full Bloom	Post Bloom
Ave. Temp. 10% kill	16	19	23	24	26	26	27	27
Ave. Temp. 90% kill	0	4	9	15	20	20	23	25

CHERRIES: *For Bing, Lambert and Rainier approximately 1 to 2 degrees hardier through First White.

Bud Development Stage	First Swelling	Side Green	Green Tip	Tight Cluster	Open Cluster	First White	First Bloom	Full Bloom	Post Bloom
Ave. Temp. 10% kill	12	22	25	26	27	27	27	28	28
Ave. Temp. 90% kill	1	8	13	18	21	23	25	25	26

PRUNES: *For Italian Prunes and Early Italian Prunes.

Bud Development Stage	First Swelling	Side White	Tip Green	Tight Cluster	Full Bloom	First Bloom	First White	Post Bloom
Ave. Temp. 10% kill	12	16	17	22	25	24	26	27
Ave. Temp. 90% kill	1	2	5	11	18	17	21	24

PEACHES: *For Elberta.

Bud Development Stage	First Swelling	Calyx Green	Calyx Red	First Pink	First Bloom	First Bloom	Post Bloom
Ave. Temp. 10% kill	19	21	23	25	26	27	28
Ave. Temp. 90% kill	0	4	6	15	21	23	25

APRICOTS

Bud Development Stage	First Swelling	Tip Separates	Calyx Red	First White	First Bloom	Full Bloom	In the Shuck	Green Fruit
Ave. Temp. 10% kill	15	24	21	23	24	27	27	28
Ave. Temp. 90% kill		7	1	13	14	20	24	26

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PART WA686 - FARM DISTRIBUTION SYSTEMS

SUBPART A - GENERAL

WA686.10 Purpose of system.

Irrigation water must be made available to each part of the farm irrigation system at a rate and elevation or pressure that permits proper operation of the selected method(s) of water application. Irrigation water should be conveyed as economically, efficiently, and safely as possible. The delivery part of the farm irrigation system must be large enough to furnish the required irrigation water to meet crop demands during peak-use periods. If the water is delivered on a rotation or turn basis, the system must be large enough to allow delivery of the water in the time allotted. Plans should provide for future needs and expansion.

WA686.11 Types of systems.

(a) The type of distribution facilities varies with the method of application. Sprinklers require mains and laterals and sub-irrigation requires either ditches or tile. The contour-levee method generally uses a head ditch and levees, and the furrow and border methods require either ditches or pipelines with siphon tubes, gated pipes, or other forms of takeouts.

(b) Distribution facilities generally are surface ditches, with necessary grade-stabilization and water-control structures, or pipelines. Facilities must be accessible for operation and maintenance and must be able to provide water to every part of an irrigated area. They should be located so that they interfere with farming operations as little as is practical.

SUBPART B - PIPELINES

WA686.20 Suitability and uses.

(a) The use of pipelines is an efficient method of conveying irrigation water for both surface (low pressure) and sprinkler (pressure) systems. The suitability, characteristics and general requirements for pipeline systems are discussed in National Engineering Handbook, Section 15, Chapter 3, and Engineering Field Manual, Chapter 15. Design criteria, installation requirements, and material specifications for the most commonly-used pipeline materials are included in the National Handbook of Conservation Practices (SCS Technical Guide Section IV). For pump lines, an economic analysis should be made to provide a basis for size selection. The procedure for economic pipeline (pump) evaluation is discussed in Part 690, Economic Evaluation.

(b) Pipeline delivery systems may consist of a combination of both buried line and surface pipe. A buried mainline may extend from the water source to individual fields and surface pipe used for the field main. This permits moving the field main to other fields. The buried main can also extend into the fields as a field main and have risers and valves appropriately spaced to deliver water to surface ditches or gated pipe.

(c) Gated pipe.

(1) Gated pipes are portable pipes with uniformly-spaced outlets for releasing irrigation water into individual furrows or corrugations. Gated pipe can be used in place of head ditch at the top of a field, or it can be used in conjunction with the head ditch. It is well suited to use in place of an intermediate head ditch on fields too long to be irrigated in one length of run. This permits cultivation through longer rows since the pipe can readily be moved.

(2) When connected to buried pipelines through hydrants, gated pipes allow the water to be conveyed in an enclosed system from the source to the head of the furrows or borders. Seepage losses are reduced to a minimum. They also provide a convenient means of regulating flow. The gated outlets provide positive control and are especially good if cut-back streams are used. The gates may be slide gates covering either round or rectangular holes in the pipeline. They may be round alfalfa-type valves or round butterfly valves in short sections of proper size tubing connected to the pipe. Flexible sleeves are frequently attached to the gates to aid in distribution and to minimize erosion at the inlet to the rows. Water flow can be regulated by the degree the gates are opened.

SUBPART C - OPEN CHANNELS

WA685.31

WA686.30 Suitability and uses.

(a) Irrigation ditches are open channels used to carry irrigation water to its point of use. They are used more than any other type of conveyance. Small inadequate ditches without proper control structures and maintenance probably are the source of more trouble in operating an irrigation system than any other cause.

(b) Ditches that carry irrigation water from the source of supply to one or more farms are known as canals and laterals. They are generally large and should always be permanent installations. Field ditches convey water from the source of supply to a field or fields within the farm unit. They also should be permanent installations.

(c) Head ditches are used to distribute water in a field for surface irrigation. They are laid out at the high end of the irrigation run and are generally perpendicular to the direction of irrigation for furrows and borders. In contour-ditch irrigation and in sub-irrigation where water is distributed through open ditches, the head ditch runs down the slope and water is released on one side or both. Head ditches can be permanent or constructed each irrigation season. The water surface in head ditches should be 0.5 to 1 foot higher than the ground to be irrigated. If possible, the ditches should be nearly level (less than 0.1 ft fall per 100 ft) so that water can be backed up for a maximum distance, thus requiring a minimum of check dams and labor to control irrigation flow.

(d) Ditches work best in clay or loam soils since seepage is usually less and ditch banks are more stable than those in sands or sandy loams. Open ditches can carry large volumes and have the advantage of low cost per volume of water carried.

(e) Ditches have some limitations. Losses from seepage and evaporation can be high, and vegetation and burrowing animals can cause trouble. Ditches take up valuable space and may hinder farm operations. Their maintenance requirements are higher than those for pipelines.

WA686.31 Unlined and lined channels.

Ditches may be unlined or lined. A variety of materials are used for lining, the selection of which depends upon climate, soil conditions, costs and other factors. The types of materials, their suitability, limitations, and general installation requirements are discussed in more detail in National Engineering Handbook, Section 15, Chapter 3, Planning Farm Irrigation Systems. Design criteria, installation requirements and material specifications for the most common types of lining materials are included in Section IV of the Technical Guide.

The most common ditches in Washington State are non reinforced concrete lined. A couple of design tables have been included in Part WA691.

SUBPART D - SEEPAGE LOSSES

WA686.42(a)(1)

WA686.40 Need for seepage control.

As the demand for water increases, conservation of the existing water supply for irrigation purposes becomes increasingly important. Major conservation can be accomplished through reduction in the amount of water lost through seepage from canals, laterals, and farm ditches during the transportation to the irrigators' fields.

WA686.41 Methods of seepage loss measurements.

(a) The inflow-outflow method is the most practical for determining seepage losses. This method utilizes measurements at the upstream and downstream ends of a reach being studied and is only as accurate as the measurement of flow. Weirs, flumes, orifices, and control structures can be used for measuring flows. Current meters can be used to measure the velocity from which rate of flow is derived. Measurements by the inflow-outflow method should be limited to longer reaches of canal, where results are more accurate and dependable, and does not significantly interfere with the operation of the canal or lateral.

(b) The easiest and most dependable method is by ponding. Accuracy is good, however does not totally represent a flowing condition. This method blocks off the flow and the amount of water lost over a given time is measured. Where seepage is low, measurement of evaporation during the test period must also be made. Where seepage losses are high or test period is short, evaporation losses are often neglected due to being a small percentage of total losses.

(c) Various seepage meters have been developed and used to measure losses in existing canals while operating. The most commonly used is a modified version of the constant-head permeameter for use under water. The seepage rate may be computed from the volume or weight of water lost in a known period of time in the area under the meter. The seepage meter is not considered an accurate means of measuring seepage losses. If tests are made at close intervals throughout a reach, a better indication of the average loss rate can be determined. Its main value lies in determining approximate location of relatively high seepage losses.

WA686.42 Factors affecting seepage.

The main factors known to have a definite effect on seepage rates can be grouped as follows:

(a) Characteristics of the soil through which the canal, lateral or ditch runs, such as soil texture and substratum material.

WA686.42(b)

(b) Depth of water in the canal, wetted perimeter, depth to water table or restrictive layer and relative position of the water volume to the ground surface.

WA686.43 Estimating Seepage Losses.

The following procedure for determining seepage losses and figure WA686.43.1 were developed from USBR seepage studies and FAO Number 1, Irrigation and Canal Lining.

(a) Transport Material. Figure WA686.43.1 gives a range of expected seepage losses dependent upon the transport material. The range is dependent upon the amount of fines in the material. In addition the following losses may be expected.

Ditch side vegetation	0.5-1% loss per mile
Buried Pipeline	0.01-0.15 ft^3/ft^2 dependent upon age and material

(b) Example of seasonal water loss in an earth ditch:

Given: Soils - Loam
Ditch Length - 1320 ft.
Flow Area - 2.5 ft^2/ft (measured wetted perimeter)
Time - water in ditch 180 days
Stream Size - 2.5 cfs

Solution:
Figure WA686.43.1 Water Loss Loam = 1.23 $ft^3/ft^2/day$

$$\text{Seepage Loss} = \frac{\text{Area x Length x Loss x Days}}{43560\ ft^3/\text{Acre}} = \frac{2.5 \times 1320 \times 1.23 \times 180}{43560}$$

(Ave. value used)

7 Ac.Ft.

'S x Length (mile) x 2 Ac.Ft/cfs/Day (constant)
.80 x 1320/5280 x 2

: 19.02 Ac.Ft./Season

closer than 0.5 Ac. Ft.

= 19 Ac. Ft./Season
(Approximately 24 gpm of 2.5 cfs)

WA686.44 Lining materials

(a) Open channels.

(1) Portland Cement Concrete - Both nonreinforced, installed mostly as slip-form in the smaller canals, laterals and ditches; and reinforced installed mostly in larger canals. Sealing of cracks is a continuing maintenance item in both nonreinforced and reinforced ditches.

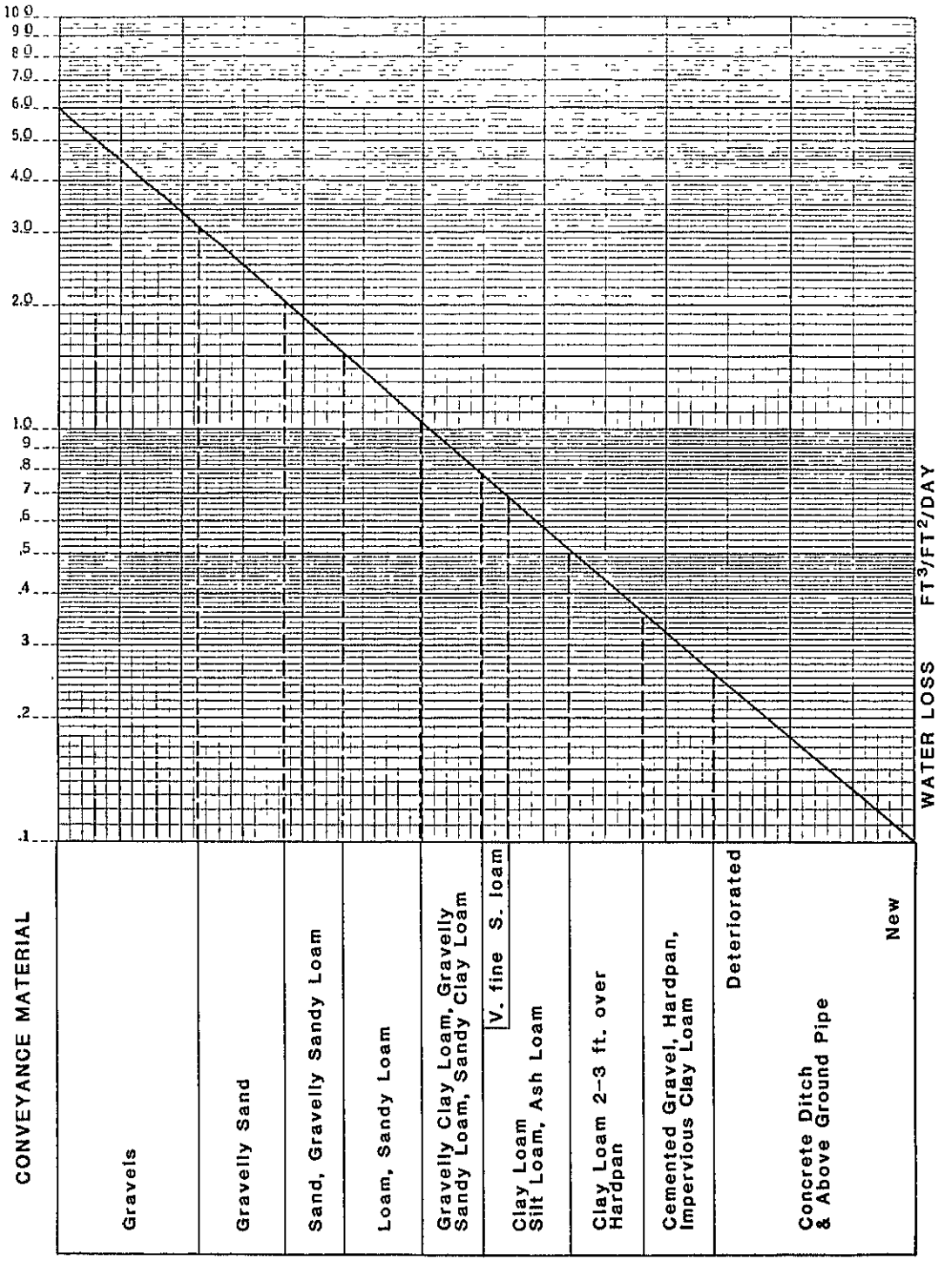
(2) Compacted earth, where either outside material is imported or inplace material is compacted to increase density and reduce seepage.

(3) Flexible membrane of plastic, elastomenic, and butyl sheeting is installed on a well-prepared subgrade. Depending on sheeting material, location and exposure hazards burying may or may not be required.

(b) Closed conduits. Pipelines may be installed using such material as CMP or concrete as a lining installed on generally canal grade. These act as no-head channel flow conditions.

WA686.43.1

FIGURE WA686.43.1 - Seepage Loss (ft^3/ft^2/ Day Per Foot of Length) by Transport Material



SUBPART E - WATER MEASUREMENT

WA686.50 Need for water measurement.

As the demand for water and energy increases, the need for more efficient use of water increases. In most of the western states, including Washington, the available water supplies are appropriated and water is distributed to users in accordance with their legal rights to its use. Water measurements are essential to the equitable distribution of the water supply and to the efficient use of the water.

WA686.51 Methods of water measurement.

The most common methods of water measurement and the types of equipment or structures required are also discussed in National Engineering Handbook, Section 15, Chapter 9, Measurement of Irrigation Water. Some methods discussed in NEH-15 are included in this guide as appropriate. The units of flow measurement commonly used for water in Washington are cubic feet per second (cfs) and gallons per minute (gpm). In certain systems, or districts the terms; inches, feet, acres or shares are used. You must consider these terms carefully because they generally are very localized and may mean different things in different area. The Washington standard units are Second Feet (SF) and Acre Feet (AF).

SF = 1.98 AF per day

(a) Open channel flow.

(1) Volumetric. Volumetric flow measurements are made by measuring the time required to fill a known volume.

(2) Submerged orifice plates.

(3) Weirs (Cipolletti, V-notch, rectangular, broad crested)

(4) Flumes (Parshall, WSC, cutthroat, V-notch, broad crested)

(5) Siphon tubes.

(6) The float-type by measuring flow cross-sections and flow velocities.

(7) Current meter and calibrated cross-section.

(8) Velocity head rod (jump stick).

WA686.51(b)

(b) Pipe flow.

(1) Flow meters.

(2) Venturi tubes.

(3) Orifice plates.

(4) Manometers.

(5) Other latest State-of-the-Art.

SUBPART F - WATER CONTROL STRUCTURES

WA686.60 Need for structures.

Water control structures must be an integral part of the farm distribution system to assure proper distribution of the water supply, prevent erosion and loss of water. Adequate control structures also reduce labor costs.

WA686.61 Types and suitability of structures.

(a) The types of structures and materials used are dependent on site conditions, the type of distribution system and the cost of materials. Water control structures are discussed in more detail in National Engineering Handbook, Section 15, Chapter 3, Planning Farm Irrigation Systems and the Engineering Field Manual for Conservation Practices.

(b) Related structures. When open ditch systems are used to deliver water to a surface flood system, frequently it is necessary to provide some type of structure to carry the water across depressions or drains, and under roads or other obstructions and control distribution within or between fields.

(1) Flumes. Flumes are artificial channels supported by substructures which carry water across areas where ditches are not practical. They must be large enough to carry the full discharge of the ditch and the substructures strong enough to support the channel when it is filled with water.

(2) Inverted siphons. Inverted siphons are closed conduits to carry water under depressions, roads, or other obstructions.

(3) Culverts. Culverts are closed conduits installed at ditch grade and commonly used to carry water under farm roads. They are usually made of corrugated metal, but can also be constructed of concrete pipe, plastic pipe, steel pipe or concrete box culverts.

(4) Grade control. Where the ditch grade is such that the design flow would result in an erosive velocity, some protective structure, such as a drop spillway, or pipe drop, must be used. These structures control ditch velocity by lowering the water abruptly from a higher to a lower level. This flattens the grade in the flow sections of the ditch thus lowering the velocity. A pipe drop has an advantage in that it can also serve as a ditch crossing.

WA686.61(b)(5)

(5) Distribution structures. Distribution control structures are required for easy and accurate distribution of irrigation water to the various fields on a farm or to various parts of a field. These may consist of division boxes to divide or direct the flow of water between two or more ditches, checks that form adjustable dams to control the elevation of the upstream water surface so that water can be diverted from the ditch, or turn-out structures.

(6) Application control structures. Various devices are used for controlling the flow of water into each furrow or border. Since it is generally desired to deliver nearly equal flows into a number of rows at one time, use is made of the hydraulic concept that outlets of equal size operating under the same pressure head will have equal flows. Rates of flow are changed during the irrigation by altering the size of the outlets, varying the number of outlets used, or changing the operating head over the outlets. The most common type of outlets used are siphon tubes or spiles for delivery from open ditches and gates installed in sections of a pipe for delivery from surface or underground pipelines.

(i) Siphon tubes. Siphon tubes are usually made of aluminum or plastic pipe, and normally preformed to fit a half cross-section of an irrigation ditch. Normal diameters used for furrow or corrugation irrigation range from one-half to two inches. Normal diameters used for border irrigation range from two inches to four inches. Various lengths are available, but normally these smaller tubes are either 5.0 or 7.5 feet long. The discharge of a siphon tube depends on (1) the inside diameter of the tube, (2) the length of the tube, (3) inside roughness, (4) number and degree of bends, and (5) the head under which the tube is operating. When the outlet end is submerged, the operating head is the difference in elevation between the water surfaces at the entrance and outlet ends of the tube. When the tube is flowing free, the operating head is the difference in elevation between the water surface at the entrance and the center of the outlet end of the tube. When the water supply decreases or is interrupted, standard siphon tubes usually lose their prime. A siphon tube that automatically resumes operation after interruptions in the water supply is a labor-saving device and provides more safety in furrow water application.

(ii) Spiles. Spiles are pipes, 1.0 to 2.5 inches in diameter, used to distribute water from a ditch into corrugations or furrows. They are set permanently in the bank of the head ditches and must be long enough to extend through the bank and linings, if any. Care must be taken to install spiles at the proper elevation so that the same flow enters all the rows being irrigated at the same time. Spiles are used at places where the head ditch is nearly level. The water elevation in each ditch section can then be controlled by a check. It should be high enough above the center of the spile opening to deliver the maximum design furrow stream. The water can then be lowered to a point that delivers the cut-back stream through the spiles. Flow can also be controlled by gates at the inlet end.

SUBPART G - TAILWATER RECOVERY FACILITIES

WA686.70 General

Recovery or recirculating facilities collect irrigation runoff and return it to the same or an adjacent field for irrigation use. Such systems can be classified according to the method of handling runoff or tailwater. If gathered water is returned to a field lying at a higher elevation, or applied to a lower-lying field, it is usually referred to as a return-flow system. The component parts consist of tailwater ditches to collect the runoff, drainageways or waterways to convey water to a central collection area, a sump or reservoir for water storage, a pump, a power unit, and a pipeline or ditch, to convey water for redistribution. Under certain conditions where gravity flow can be used, neither pump nor pipeline may be necessary.

WA686.71 Storage.

(a) A return flow system will provide for the temporary storage of a given amount of water, and includes the needed pumping equipment and pipeline to deliver the water back into the application system. The sequence system generally will have a pump, and only enough pipe to convey the water to the head ditch of the next field. It is frequently possible to plan the farm so that there is enough elevation difference between fields to apply the runoff water to a lower field in sequence by gravity. Recovery systems may also be classified according to whether or not they accumulate and store the runoff water. Systems storing collected runoff water are referred to as "reservoir" systems. Systems which immediately return the runoff water require little storage capacity. They have automatically-cycled pumping systems and are termed "cycling-sump systems." One or more types of systems may be applicable to a given farm. A sump is used where land value is high, water cannot be retained in a reservoir, or water ponding is undesirable. Dugouts or reservoirs are more common and most easily adapted to storage and planned recovery or irrigation tailwater.

(b) A reservoir system collects enough water to be used as an independent supply or as a supplement to the original supply. The reservoir size will depend on whether collected water is handled as an independent supply, and, if not, on the rate water is pumped for re-use. A smaller reservoir is required if the system is used for cut-back irrigation. Reservoirs should be at least 8 and preferably 10-feet deep to discourage growth of aquatic weeds. Side slopes should be 2 or 2.5 feet horizontal for each one foot vertical to prevent sloughing of the soil banks. Where dugouts may be a safety hazard, one end slope should be five-to-one or flatter to provide a way of escape in case of accidents. The reservoir should provide for an unused storage depth of at least 1.0 foot. Special consideration should be provided for water entry into the reservoir in a non-erosive manner.

WA686.72

WA686.72 Pumps.

(a) The cycling-sump system consists of a sump and a pump large enough to handle the expected rate of runoff that enters the sump. The sump is generally a vertical concrete or steel tube with a concrete bottom. The tube is approximately 48 inches in diameter and installed to a depth of approximately 10 feet. Pump operation is controlled automatically by a float-operated or electrode-operated switch. Some storage can be provided in the collecting ditch.

(b) The size, capacity, location, and selection of equipment for these systems are functions of the main irrigation system, the topographic layout of the field or fields, and the farmer's irrigation practice and desires.

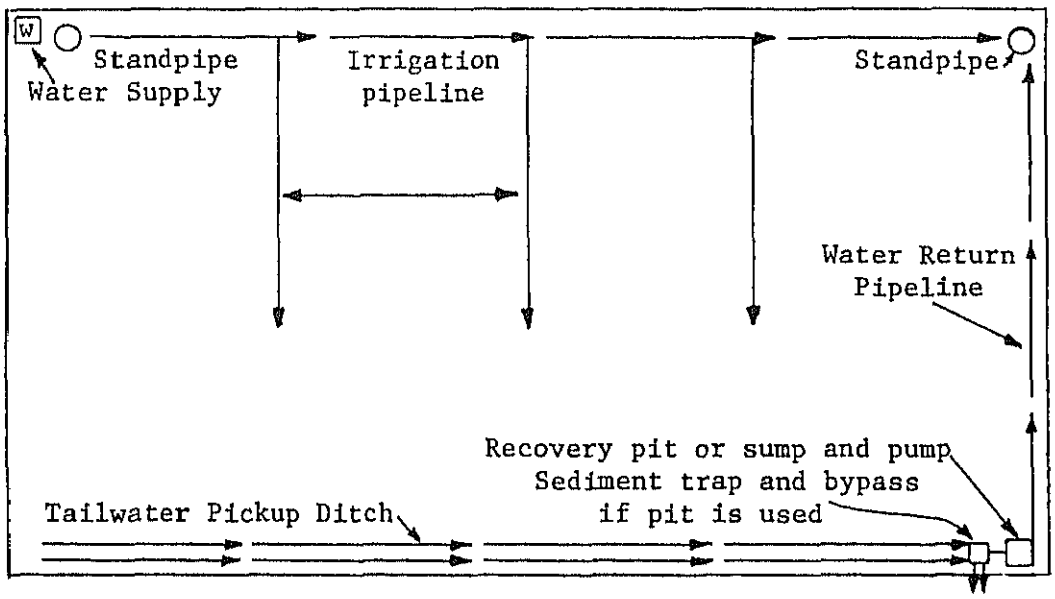


Figure WA686.72.1 - Plan for a Return-Flow System Used in Conjunction with an Underground Pipeline Distribution.

(c) Many different types of pumps can be used with tailwater recovery systems. These include single-stage turbines, hand-primed centrifugals (permanent or tractor-driven), propeller-type or submerged centrifugal (floating pump). Pumps and power units should be matched to the design requirements of the system. The pumping head will generally be low and consequently the horsepower requirements are low (5-10 hp) even for units that discharge reasonably high flow rates. Caution should be used when selecting pump size. For a cycling-sump system when a reuse pump is connected back to the top end of the irrigation system, it is desirable to pump at the lowest continuous rate that will keep up with the quantity of total runoff produced. This will prevent large surges of water that might overload the system (pump, pipeline, head ditch, turnout devices, siphon tubes). For example, it may be better to pump at 500 gpm for an irrigation set time, say 12 hours continuously, than 1000 gpm one-half of the time.

WA686.73 Design procedures.

(a) It is necessary that runoff (RO) flows be either measured or estimated to adequately size the cycling sump system, and the recovery pit or dugout. Table WA686.73.1 indicates expected recovery in gpm based on irrigation head or inflow, and the expected runoff. Expected recovery back to the head of the irrigation system is based on 65% of the runoff. Losses due to seepage, evaporation, overflow and miscellaneous losses do occur in the recovery, storage and pump back system. A furrow flow system evaluation should be used to determine runoff (RO) when possible.

(b) Example:

Furrow flow analysis gives	RO = 35%
Irrigation head or inflow	Q = 1000 gpm
Expected recovery	Q = 228 gpm

Use this recovery flow to size cycling and the sump pump system. The overflow facilities at the sump should be sized to handle higher peak flow, interruption in power, etc.

(c) When a recovery pit or dugout is used, it should have capacity to store the runoff from one complete irrigation set. The pump capacity will be dependent on the method or schedule of reuse planned. Table WA686.73.2 provides sizing of pits based on desired pump peak flow and desired set time.

(d) It is most desirable to install a small shallow sediment collection basin at inlet to the storage pit rather than allow sediment to collect in the storage pit. A shallow basin can be cleaned relatively easy with available farm machinery, where a large pit requires cleaning with contractor-size equipment. Either way, sediment settlement storage must be provided.

WA686.73.2.

Estimated Runoff (%)1/ (GMP)2/ Available	20%	25%	30%	35%	40%	45%	50%
150	20	24	29	34	39	44	49
200	26	33	39	46	52	59	65
300	39	49	59	68	78	88	98
400	52	65	78	91	104	117	130
500	65	81	98	114	130	146	163
600	78	98	117	137	156	175	195
700	91	114	137	159	182	205	228
800	104	130	156	182	208	234	260
900	117	146	176	205	234	263	293
1000	130	163	195	228	260	293	325
1200	156	195	234	273	312	351	390
1400	182	228	273	319	364	410	455
1600	208	260	312	364	416	468	520
1800	234	293	351	410	468	527	585
2000	260	325	390	455	520	585	650
2200	286	358	429	501	572	644	715
2400	312	390	468	546	624	702	780
2600	338	423	468	592	676	671	845
2800	364	455	546	637	728	819	910
3000	390	488	585	683	780	878	975

Table WA686.73.1 - Expected recovery in GPM* from Tailwater System.

*Based on 65% recovery of estimated runoff

1/ Estimated Runoff is the percent of water that normally will run out the end of the furrow or border. This is a judgment factor based on such factors as soil type, method of irrigation, efficiency of designed irrigation system and the individual farm operator.

2/ GPM Available is simply the amount of irrigation water that will be supplied to the system being considered. This does not include the tailwater being recovered from this system.

Pumpback Flow (GPM)	Length of Set 6-Hour	8-Hour	12-Hour	24-Hour
100	200	267	400	800
200	400	533	800	1600
300	600	800	1200	2400
400	800	1067	1600	3200
500	1000	1333	2000	4000
600	1200	1600	2400	4800
700	1400	1867	2800	5600
800	1600	2133	3200	6400
900	1800	2400	3600	7200
1000	2000	2667	4000	8000
1100	2200	2933	4400	8800

Table WA686.73.2 - Tailwater Pit Sizing Table (Gallons) for Intermittent pumpback

To provide for adequate storage (gallons) for intermittent pumpback systems not indicated use; Pond Volume = $\frac{QT}{3}$

Where Q = volume of pumpback system
T = irrigation set time

WA686.73.3

Table WA686.73.3 - Overall Irrigation Efficiencies Obtainable With Different Degrees of Re-Use Waste Water

Original Application Efficiency	% of Waste Re-used	First Re-use			Second Re-use			Third Re-use			Fourth Re-use		
		% of Original Water Used	Effective Use % of Original	Accumulated Effect	% of Original Water Used	Effective Use % of Original	Accumulated Effect %	% of Original Water Used	Effective Use % of Original	Accumulated Effect %	% of Original Water Used	Effective Use % of Original	Accumulated Effect
60	40	16	9.6	69.6	2.6	1.5	71.1	1.1	.7	71.8	.2	.1	71.9
	60	24	14.4	74.4	5.8	3.5	77.9	1.4	.8	78.7	.4	.2	78.9
	80	32	19.2	79.2	10.2	6.1	85.3	3.3	2.0	87.3	1.0	.6	87.9
50	40	20	10.0	60.0	4.0	2.0	62.0	.8	.4	62.4	.2	.1	62.5
	60	30	15.0	65.0	9.0	4.5	69.5	2.7	1.4	70.9	.8	.4	71.3
	80	40	20.0	70.0	16.0	8.0	78.0	6.4	3.2	81.2	2.6	1.3	82.5
40	40	24	9.6	49.6	5.8	2.3	52.9	1.4	.6	53.5	.3	.1	53.6
	60	36	14.4	54.4	13.0	5.2	59.6	4.7	1.9	61.5	1.7	.7	62.2
	80	48	19.2	59.2	23.0	9.2	68.4	11.0	4.4	72.8	5.3	2.1	74.9
30	40	28	8.4	38.4	7.8	2.4	40.8	2.2	.7	41.5	.6	.2	41.7
	60	42	12.6	42.6	17.8	5.3	49.9	7.5	2.3	52.2	3.1	.9	53.1
	80	56	16.8	46.8	31.4	9.4	56.2	17.6	5.3	61.5	9.8	3.0	64.5
20	40	32	6.4	26.4	10.2	2.1	28.5	3.2	0.7	29.2	1.0	.2	29.4
	60	48	9.6	29.6	23.0	4.6	34.2	11.0	2.2	36.4	5.3	1.1	37.5
	80	64	12.8	32.8	41.0	8.2	41.0	26.2	5.3	46.3	17.5	3.5	49.8

SUBPART H - AUTOMATION

WA686.80 General.

(a) High labor costs have caused many farmers to seek labor-saving devices for their irrigation enterprises. These irrigators are interested in some method of making their systems automatic, or at least, semi-automatic. The first requirement for automation of a furrow system is for it to be properly designed, installed, and maintained. Systems are possible that are completely automatic with re-set features and water sensors that detect the need for irrigation, turn on the water if supplied from farm sources, correctly irrigate the field portion, turn off the water after the irrigation is complete, and re-set so that the system will be prepared for the next irrigation.

(b) Most automated farm systems are semi-automatic with the irrigator deciding when irrigation is needed and delivering the irrigation volume required to the field. Delivery to a field may be by surface ditches or surface or underground pipelines. Where surface ditches are used, the head ditches are usually lined and check gates are automated so that they are tripped by weight from an accumulation of water in a container that fills slowly from a controlled rate of flow into the vessel. The ditch has a pre-determined grade so that the water will be applied uniformly to the correct number of furrows at a proper design rate. The furrows are irrigated by use of splies through the ditch, or by use of the fail-safe siphon tubes.

(c) Automation is more commonly used with underground pipe in conjunction with surface gated pipe. Pneumatic valves in hydrants attached to the underground pipe controls the flow to sections of gated pipe. These valves are usually controlled by time clock which simply allows the irrigation to continue for a pre-determined length of time, and diverts water to sequencing sets across the field(s).

(d) If farm irrigation systems are to be automated, the following requirements should be met:

(1) The system should be such that failure of the automation will result in excessive damage to the immediate farm, or to other property.

(2) The system should be simple, reliable, and easily-maintained.

(3) It should be economically feasible.

WA686.80(d)(4)

(4) It should irrigate the field efficiently, and distribute water uniformly.

(5) It should be capable of varying irrigation frequency or applying various depths of water in accordance with seasonal plant needs.

(6) Any automatic or semi-automatic surface irrigation system include provisions for tailwater recovery.

(e) Irrigation frequency can also be controlled by use of sensing or timing devices which sequence the irrigation from one set to the next set by automatically controlling gates or valves in the distribution system. Moisture resistance blocks and tensiometers are used as sensing devices. Tensiometers can be used only where soil moisture tensions are less than one-atmosphere. The resistance blocks are capable of measuring a greater range of soil moisture conditions, and therefore, are probably more satisfactory for most uses.

SUBPART I - DRAINAGE SYSTEM

WA686.90 Surface drainage.

(a) Provisions to remove excess water promptly and safely from the irrigated land should be included as an integral part of the design of a farm irrigation system. The excess water may be surface runoff from rainfall or tailwater from irrigation.

(b) Storm runoff must be diverted around or carried through the irrigation system to protect the land, the irrigation system, and crop investment. This may require special erosion control measures such as modifications in the design or layout of the irrigation system. Tailwater from irrigation must be recovered or disposed of without damage to lower lands.

(1) Rainfall runoff. Standard SCS procedures are available to determine the volume and rate of runoff from precipitation. Runoff from precipitation can leave the land through natural water courses. Tailwater or waste ditches are needed at the lower end of irrigation runs to collect both this rainfall runoff and tailwater from irrigation. Storm runoff peaks generally govern the capacity requirements. Where storage and tailwater recovery facilities are provided for irrigation, the storm runoff should bypass the storage reservoir to prevent rapid loss of storage capacity by silt carried in the storm runoff or this condition should be addressed in design and capacity added to offset this event.

(2) Irrigation runoff. Provisions for storage, safe disposal or recovery of tailwater must be included in any graded furrow or corrugation irrigation layout if efficient irrigation is to be achieved. Some states now require that irrigation water not be allowed to trespass on lands not under the control of the irrigator. It is then necessary to provide some means of collecting the tailwater, transporting it to a pit or reservoir, and either store or provide recovery facilities as needed.

WA686.91

WA686.91 Subsurface drainage.

(a) Irrigation water applied plus effective precipitation must be in excess of crop evapotranspiration. Most of the excess water percolates below the root zone, and unless the underlying material is sufficiently permeable to allow penetration below drainage depth, a water table may form a few feet below the soil surface and require subsurface drainage facilities. Excess percolation of either irrigation water or rainfall may lead to a high water table that restricts root growth or promotes a saline or alkali condition. Seepage from ditches, reservoirs, and sumps may waterlog adjacent land, requiring tile or open drains to control the water table unless natural internal drainage is adequate.Where drainage facilities are needed, the water table must be held below the root zone to provide aeration and to control salinity. This control is accomplished by means of subsurface drainage which intercepts or accumulates the excess ground water and returns it to the surface.

(b) Subsurface drains are normally designed to lower and maintain the water table at a level ranging from four to eight feet below the ground surface. Subsurface drains are commonly used because the drain must be located according to ground water conditions, which generally do not correspond to field boundaries, fences or property lines. Subsurface drainage systems may consist of interceptor drains, relief drains, or pumped drains.

(1) Interceptor drains. Interceptor drains are used on the more sloping areas with high water table gradients. They are oriented perpendicularly to the direction of ground water flow.

(2) Relief drains. Relief drains are generally used on level to gently-sloping areas with a low water table gradient. They are usually oriented parallel to the direction of ground water flow. Relief drains are usually planned as a series of lateral tile lines in a gridiron or herringbone pattern in which each line is connected to a main that leads to an open drain.

(3) Pumped drains. Pumped drains are used in areas in which the soils are underlain by porous sand or gravel aquifers which can be lowered by pumping. Detailed subsurface and ground water studies are required to determine the possibility of satisfactorily lowering the water table by pumping. Where there is no natural outlet for interceptor or relief drains, a pumped drain is often incorporated to lift and dispose of the water to an acceptable drainage point.

(c) Detailed information on drainage systems can be found in the Engineering Field Manual, Chapter 14 and in NEH Section 16, Drainage.

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PART WA687 - IRRIGATION WATER MANAGEMENT

SUBPART A - GENERAL

WA687.10 Introduction.

Irrigation is the process of applying irrigation water to the soil and crops for beneficial use. Irrigation water managaement (IWM) is determining and controlling the rate, amount and timing of water applications to irrigated fields in a planned and efficient manner throughout the irrigation season. Soil erosion, undesirable water loss, loss of plant nutrients, water quality and the environment are all considered components.

(a) Provision is made to maximize the use of rainfall by increasing soil intake rates or decreasing rainfall runoff when possible. Winter precipitation is stored in the soil to the greatest extent possible to reduce spring irrigation needs. Irrigation water is supplemented to then manage and control the crop moisture environment to promote the desired crop response.

(b) An adapted conservation irrigation system must be available, either as a portable system or as a system that is established on the land to be irrigated. The irrigation system must be capable of supplying the irrigation waters at the right time, at all planned locations, and in the planned quantities to produce an economic crop yield.

(c) The objectives of the farmer/rancher must be met. These objectives normally relate to increasing income while protecting the resource base for sustained future agricultural use.

(d) National, regional, state or other local objectives may include conserving energy, decreasing the rate of decline of underground aquifers, and reducing soil erosion to acceptable limits.

WA687.11 Basic requirements.

Two basic requirements must be met before an acceptable level of irrigation water management is reached. These two requirements are:

(1) Requirement 1 - irrigators knowledge and capability. The irrigators knowledge and capability at varying levels of needs and intensities shall include such things as how to:

(i) Determine when irrigation water needs to be applied, based on crop water-use rates,and stages of plant growth.

WA687.11(1)(ii)

(ii) Determine the cost of each irrigation including energy costs for pumping (when applicable), labor, irrigation system maintenance, and water supplied. Where applicable - Analyze the benefits and costs of applying less than the optimum water supply during the irrigation season to minimize production costs and/or a limited water supply with the objectives of maximizing net income, not crop production. Research is demonstrating that water application timing is important in optimize crop yields and that by eliminating certain irrigations, crop yields will not decrease drastically. One missed irrigation at critical growth period may decrease a specific crop yield by forty percent while one or more missed irrigations at non-critical periods may only decrease crop yield by fifteen percent. (See Part 682)

(iii) Determine the amount of water required for each irrigation including all beneficial uses such as crop water needs, leaching, and frost protection.

(iv) Determine the amount of water delivered to an area. (Some form of water measurement.)

(v) Determine the normal time needed for the soil to absorb the required amount of water and how to detect changes in intake rate.

(vi) Adjust stream size, application rate, or irrigation time as necessary to compensate for changes in such factors as intake rate or amount of water to be applied.

(vii) Recognize significant erosion caused by irrigation and resulting effect.

(viii) Estimate the amount of irrigation runoff from an area.

(ix) Evaluate the uniformity of water application.

(2) Requirement 2 - Irrigation water management plan. The planned resource management system will consist of those management and structural practices needed to efficiently and economically treat the irrigated land resource.

(i) Increase farmer/rancher net profits by considering decreased pumping plant energy uses and costs. More efficient irrigation systems require lower gross applications of water which reduces pumping energy. Increased crop yields may result from water applied in the right quantities at the correct location and in a timely manner reduces the amount of waterlogged soils. This promotes root growth, makes more effective use of applied plant nutrients and results in increased crop yields.

(ii) Protect water and soil resources for sustained agricultural production by reducing soil erosion losses and considering decreased crop nutrient losses by reducing deep percolation of water below the crop rooting zone, and reducing runoff.

(iii) Mitigation features that will protect and enhance our environment for wildlife and aesthetic purposes if existing features are disrupted in accomplishing the other two.

WA687.12 Reportable irrigation water management.

This section is oriented towards Soil Conservation Service technicians. General users should proceed to Subpart B - Irrigation Timing (Scheduling).

(a) Irrigation water management is applied when an adapted irrigation system is in place and is being properly managed to meet the purposes intended. The two basic requirements listed under WA687.11 must be in practice and existence. This can determined as follows:

(1) Basic Requirement 1 - Irrigators knowledge and capability. It is the responsibility of the Soil Conservation Service (SCS) technician in the field office to determine that the irrigator has the proper knowledge and capability to operate his system based on crop needs. Normally, this judgment will be based on the technician's knowledge of the irrigator's performance over one or more irrigation seasons or by providing various levels of intensity on IWM assistance. The technician's notes in the cooperator's case file folder should be used to document how the technician determined that the irrigator is practicing good water management.

(2) Basic requirement 2 - Irrigation Water Management Plan. This requirement has been met when all essential irrigation practices planned to meet the objectives of Part WA687.11 documented in the cooperator's case file folder, have been installed. The responsible SCS technician in the field office will make the determination that this requirement has been met.

(b) Procedures. Indicator items may be established for each unique irrigated area, in each field office, to show that the farmer/rancher has demonstrated the use of good water management practices. It is believed that increased crop yields, decreased costs, increased irrigation efficiencies, and decreased water use will accompany the practice of good water management techniques. When these indicator items have been met on an individual farm, this can be documented in the case file folder to show that the irrigator has the proper knowledge and capability. Some examples of indicator items that can be established for unique irrigation systems are as follows:

(1) Center pivot irrigation.

(i) The irrigation system efficiency is sixty-five percent or higher. See Part 687, Subpart D, Evaluation procedure for center pivot sprinkler irrigation systems, for an explanation of center pivot system efficiency. Initially, several field evaluations will be needed per field office to establish a reasonable system level of efficiency.

(ii) Gross water applications on farm for the year do not exceed the following: The net irrigation requirement from Part 683, or localized evapotranspiration data, divided by the established system efficiency, e.g., the net irrigation requirement is eighteen inches of water. System efficiency is established as sixty-five percent. $18 \div 0.65 = 27.8$ inches or 2.3 AF/ac maximum gross water application.

WA687.12(b)(1)(iii)

(iii) Irrigated crop yields are higher than the county average, e.g., the average county wheat production is 85 bushels per acre. With good water management practices, we might expect one hundred bushels per acre.

(2) High country meadow irrigation. These areas can be divided into bottomlands and sloping lands which have unique treatment characteristics. The bottomlands are located next to the stream channels and normally have high water tables and flat slopes. The sloping lands are located between the bottomlands and the irrigation ditch and have well-drained soils.

(i) Bottomlands and sloping lands.

- Certain species of grasses are present and are named for each unique area of the field office.

- Wildlife habitat is maintained or is improved.

(ii) Bottomlands.

- The water table is controlled to the extent needed to harvest hay on at least 75 percent of the area, for example.

- Hay production is sustained at 1.5 tons per acre per year or .25 animal unit per acre per year is maintained, for example.

(iii) Sloping lands.

- Water is applied as uniformly as possible with limited wet areas and dry knolls.

- Hay production is sustained at 2.5 tons per acre per year or 0.44 animal units per acre per year are maintained.

and runoff to increase crop production
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on water, the deep percolation and runoff
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ormula:

1 equals water applied to the field,
tive rainfall.

rainfall can be estimated from Part 683
Water measurement and soil moisture
applied to the field and tailwater

r from earthen ditches where economically
ject requirements. The installation of
ill meet this requirement.

(iii) Increase irrigation system efficiency to a point needed to ensure an adequate water supply for as long, during the growing season, as it is physically possible. If the present system efficiency for a furrow irrigation system is thirty-five percent, this may need to be increased to fifty percent to properly irrigate all irrigated land within the project area.

(iv) Reduce erosion losses to the acceptable level.

(v) Sustain crop yields at stated levels.

(4) Areas with limited water supplies not adequately distributed throughout the growing season.

(i) Maintain the deep percolation and runoff fraction at a predetermined acceptable level.

(ii) Improve the delivery system to and on the farm so more water is available for on-farm field irrigation.

(iii) On-farm and lateral water conveyance facilities are maintained in a workable condition so that the best use can be made of scarce or infrequent water supplies.

(iv) Irrigation water is applied at planned management allowable deficit (MAD) levels resulting in the desired benefit of maximizing net income or utilizing available water to its fullest.

SUBPART B - SOIL MOISTURE MONITORING-GENERAL

WA687.20(c)

WA687.20 Determining when and how much to apply.

(a) The determination of when and how much to apply requires a knowledge of the available water capacity (AWC) of the soil, the management allowed depletion (MAD) or plant stress level for the specified crop, the crop peak consumptive use, crop rooting depth, and the critical periods in the growing season when the crop should not be stressed.

(b) One of the most effective ways of determining when and how much water to apply is to measure or estimate the soil water content. Measurements should be made in that part of the soil which plant roots extract their moisture and according to the moisture-extraction pattern of the particular crop. There are other methods being developed to determine when to irrigate, but measuring soil moisture is the most effective method in use now.

(1) The crop root depth for annual crops changes through the early part of the growing season. Measurements should be made in the soil profile according to the current depth of the majority of the crop roots.

(2) In uniformly-textured soils, one measurement should be made at the midpoint in each quarter of the root zone. For shallow-rooted crops maximum 3-foot deep root zones), it is probably desirable to take three measurements. As an example, in a 24-inch root zone, measurements may be taken from the 6-, 12-, and 18-inch depth.

(3) In stratified soils, one measurement should be taken from each textural strata. It may not be necessary to take a measurement in very thin layers when this thin layer can be lumped with another layer for estimating soil moisture. Where the strata is thick, a sample should be taken in 1-foot increments as a minimum. Thickness of the strata should be noted.

(c) The selection of soil moisture measurement stations is important. The stations should be located so that average soil moisture conditions in the root zone of the crop are measured. They should be located away from excess water such as, leaks in pipe joints, or low spots in a field. Average soil and slope conditions in the field should be represented in station locations. High spots with excessive water runoff would not be chosen because the soil profile in this area will not represent average root zone conditions.

Measurements should be made at other locations as indicated by any significant change or inclusion in the soil, such as an area that dries out first. It is a good practice to have at least two measurement stations in each significant inclusion and two or three stations in areas that are typical of the field. This information provides direction for adjusting the amount and frequency of irrigation for different parts of the field or for different periods in the growing season.

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WA687.20(c)

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WA687.20(c)

(1) Location in relation to plants.

(i) Row crops - locate in the crop row as near the plants as possible;

(ii) Mature trees - located 4 to 6 feet from the trunk but inside the tree drip line; and

(iii) Crops with complete cover such as alfalfa and grains - locate in representative soil and slope areas of the field.

(2) Location in relation to irrigation systems.

(i) Lateral-move sprinklers such as side-roll or hand-move aluminum pipe - locate measurement stations halfway between adjacent sprinkler heads and 10 to 15 feet from the lateral.

(ii) Center pivot sprinklers - locate measurement stations at about two-thirds of the total lateral distance from the pivot;

(iii) Solid set sprinklers - locate measurement stations where the diagonals from four adjacent sprinkler heads cross.

(iv) Trickle systems - locate in the wetted ball in the root zone; and

(v) Furrows and corrugations - measurement stations should be located in about the center of the furrow or corrugation bed near the plants.

(3) Additional locations in surface irrigation systems.

(i) One measurement station should be located 50 to 100 feet downstream from the beginning of the irrigation run near the side of the field where irrigation is to be started. This avoids seepage bias from the head ditch or pipeline and provides a reference point for starting the irrigation

n should be located near the other side of
eam from the beginning of the irrigation
overed fast enough to maintain an adequate

al stations should be located 50 to 100
irrigation run or just far enough upstream
tailwater. These stations measure minimum
erally obtain the least amount of water at

(iv) One or two additional stations should be located close to the center of the irrigation run.

(4) Location in field for sprinkler or trickle irrigation systems - sprinkler and trickle irrigation systems lose pressure down the lateral due to friction loss throughout the lateral so sprinkler heads fartherest from the main lines put out the least irrigation water. To check adequacy of irrigations, locate measurement stations as follows:

(i) 50 to 100 feet downstream from the beginning of the lateral.

(ii) 50 to 100 feet upstream from the distal end of the lateral.

(iii) At least one measurement close to the center of the lateral. For laterals 1,320 feet or less in length, one center measurement should be adequate. For laterals 1,320 feet to 2,540 feet long, locate two measurement stations at the one-third points along the lateral.

(d) Generally, measurements should be taken weekly in spring and fall and more frequently during the hot weather and critical growth periods of the crop. This depends both upon soil texture and volume of application of the system. The irrigator may be able to reduce the frequency of readings after becoming familiar with the pattern of moisture depletion. To accurately predict moisture levels, measurements should be taken and recorded regularly, regardless of the time of year or the stage of crop growth. Comparison of long term yearly records and crop yields helps the irrigator to improve management of the irrigation system by identifying peak use periods and consequences when adequate moisture wasn't available.

(e) Determining when to apply an irrigation using plant moisture symptoms are not desirable. Generally, by the time plants indicate moisture stress, yields will be reduced or quality will be affected.

(f) Research is continuing on the timing of applied volumes of water vs. yield as a means of optimizing net income. Application of irrigation water at critical growth periods for a specific crop is the key to optimizing yields vs. applying a given volume randomly during the season.

SUBPART C - MEASURING SOIL WATER CONTENT

WA687.30 Soil water content measuring methods.

(a) The following methods are used to measure soil water content:

(1) Feel and appearance of soils. This is a practical field method of estimating soil moisture without use of special equipment.

(2) Use of field instruments. These are placed in the soil profile and are usually in the form of tensiometers, electrical resistance blocks, or neutron probe access tubes.

(3) Special soil moisture measuring equipment. This method is the most time consuming, but also the most accurate and is often used to check other methods.

(4) Special plant sensing equipment. These methods are used to determine the moisture stress levels in a plant. Common types are the pressure bomb, thermo gun and infra red photography.

(b) All of these method should be considered an aid to judgment.

WA687.31 Feel and appearance method.

(a) A common method in use is the feel and appearance method where the amount of moisture in the soil is estimated. No special equipment is required, but a suitable soil auger will aid in obtaining soil samples below the 12-inch depth. With experience, this method can be quite satisfactory and give accurate estimates.

(b) Although estimating moisture conditions by feel and appearance is not the most accurate method, with experience and practice, the irrigator should be able to estimate the moisture level within an acceptable limit. The descriptions of moisture conditions in Figure WA687.31.1 and the photographs in Figure WA687.31.2 can be used to aid in the determination of moisture present in the soil and the amount needed to reach field capacity.

(c) Obtaining samples.

(1) For row crops, measurements should be made on the row or near the plants. In sprinkler irrigation, the measuring stations should be between the sprinkler heads and 10 to 15 feet away from the lateral.

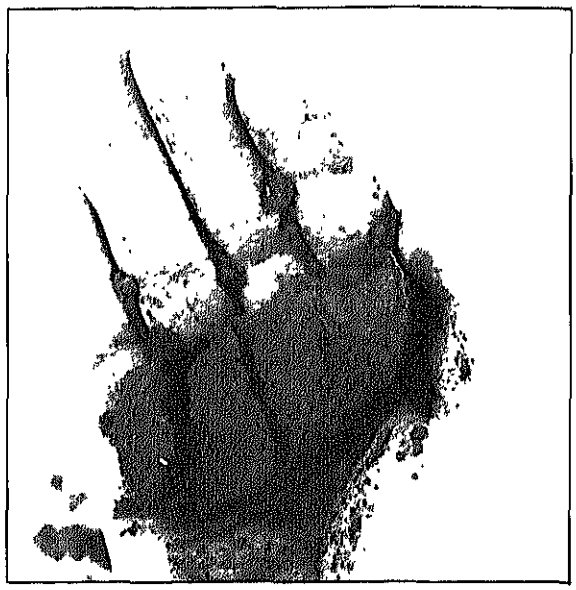
Figure WA687.31.1 - Guide for Determining How Much Moisture is Available for Crops.

Available Moisture	SOIL TEXTURE			
	Coarse (Sandy, Loamy Sand)	Moderately Coarse (Sandy Loam, Fine Sandy Loam)	Medium (Loam)	Fine (Silt Loam, Clay Loam)
100% (field capacity)	Leaves wet outline on hand when squeezed. (0.0)	Appears very dark, leaves wet outline on hand; makes a short ribbon. (0.0)	Appears very dark, leaves wet outline on hand; will ribbon out about 1". (0.0)	Appears very dark, leaves slight moisture on hand when squeezed; will ribbon out about 2". (0.0)
70%-80%	Appears moist; makes a weak ball. (0.2-0.3)	Dark; makes a hard ball. (0.3-0.4)	Quite dark, makes tight plastic ball; ribbons out 1/2". (0.4-0.6)	Quite dark; ribbons and slicks easily; makes plastic ball. (0.5-0.7)
60%-65%	Appears slightly moist; forms weak brittle ball. (0.4)	Fairly dark; makes a good ball. (0.6)	Fairly dark, forms firm ball, barely ribbons. (0.8)	Fairly dark, forms firm ball; ribbons 1/4-1/2". (0.9)
50%	Appears dry; forms very weak ball or will not ball. (0.5)	Slightly dark; forms weak ball. (0.8)	Fairly dark; will form ball; slightly crumbly. (1.2-1.3)	Balls easily, small clods flatten out rather than crumble; ribbons slightly. (1.1-1.2)
35%-40%	Dry; will not ball. (0.6-0.7)	Light color; will not ball or forms brittle balls. (0.9-1.0)	Slightly dark; forms weak brittle ball; crumbly. (1.2-1.3)	Slightly dark, forms weak balls; clods crumble. (1.4-1.5)
Less than 20% (wilting point)	Very dry; loose flows through fingers. (0.8-1.0)	Dry; loose flows through fingers. (1.3-1.6)	Light color; powdery, dry. (1.6-2.0)	Hard, baked, cracked light color. (1.8-2.3)

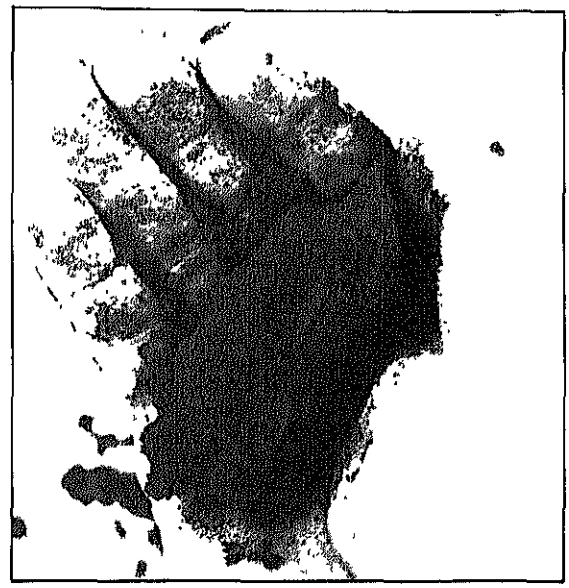
NOTE: Figures in parentheses at end of each entry represent approximate moisture deficit from field capacity when soil is uniform with depth. Ball is formed by squeezing soil hard in fist. Ribbon is formed by rolling soil between thumb and forefinger.

WA687.31.2(a)

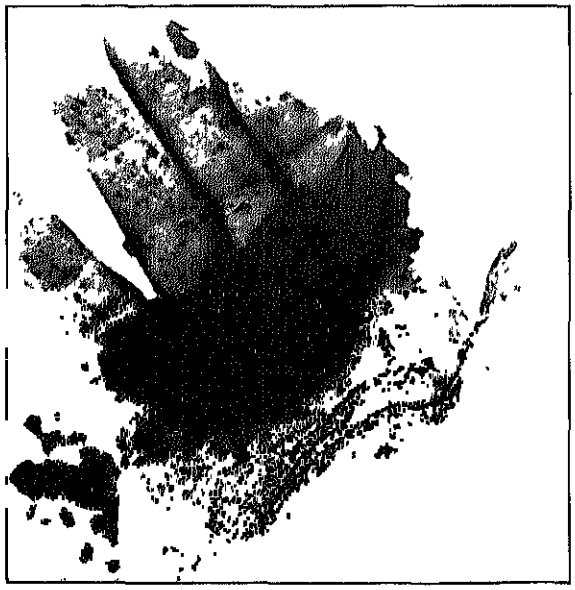
Figure WA687.31.2(a) — Feel and appearance of soils.
Moderately Fine Texture — Clay Loams and Silty Clay Loams



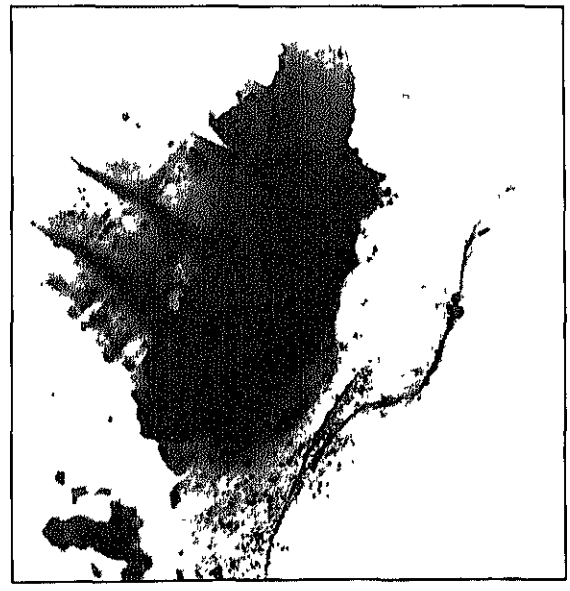
— 0 to 25% Available Moisture —
Crumbles readily, will hold together but "balls" with difficulty and breaks easily.



— 25 to 50% Available Moisture —
Does not crumble, forms readily, will "ball" with pressure.



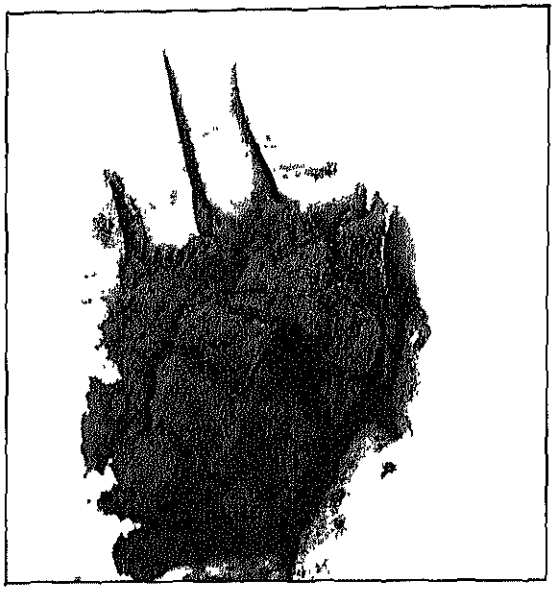
— 50 to 75% Available Moisture —
Forms "ball" readily, will "ribbon" out between thumb and forefinger. Somewhat slick feeling.



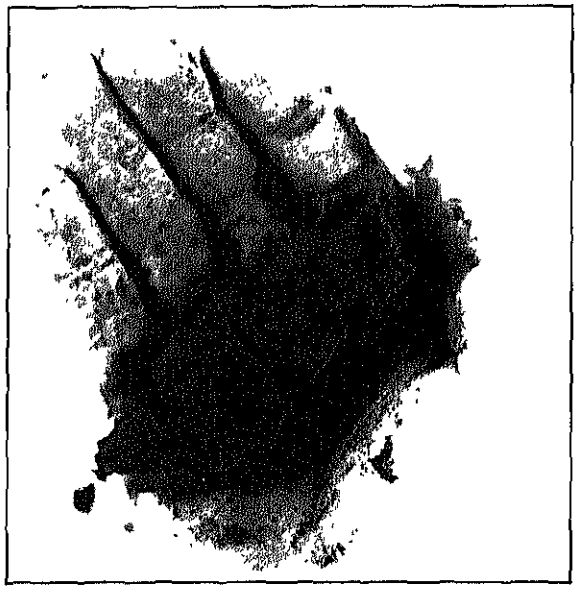
— 75 to 100% Available Moisture —
Easily "ribbons" out. Has "slick" feeling.

WA687.31.2(b)

Figure WA687.31.2(b) — Feel and appearance of soils.
Medium Texture — Loams and Silt Loams



— 0 to 25% Available Moisture —
Crumbles easily, tends to hold together from hand pressure.



— 25 to 50% Available Moisture —
Somewhat crumbly, will hold together in hand with pressure.



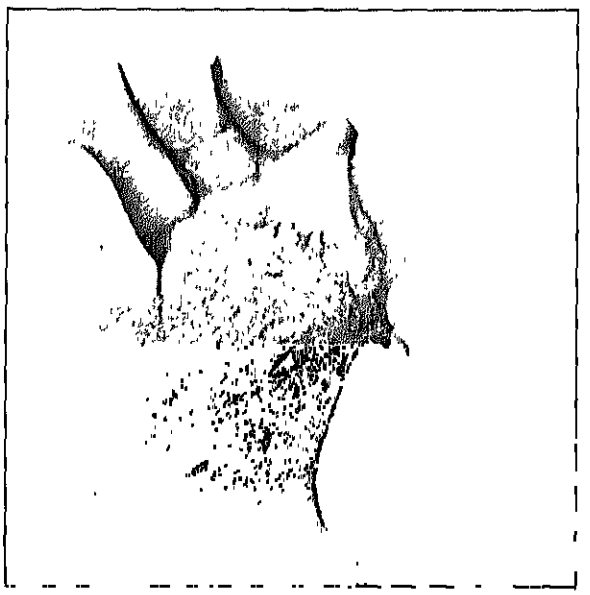
— 50 to 75% Available Moisture —
Forms "ball" readily, will "slick" slightly with pressure.



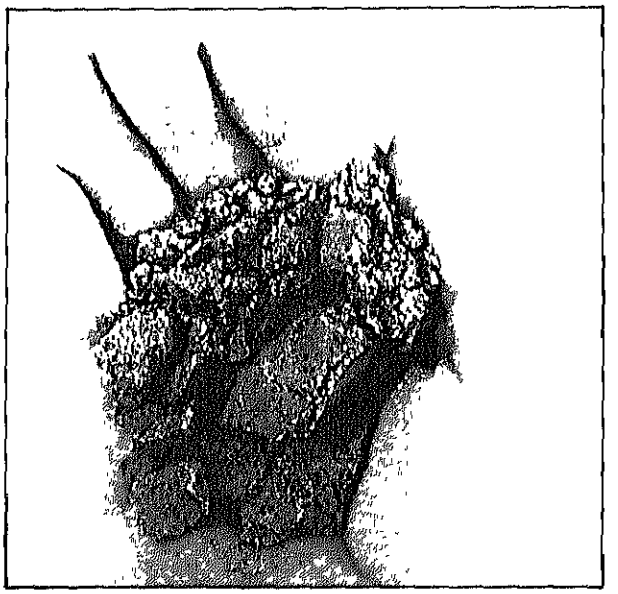
— 75 to 100% Available Moisture —
Forms "ball" easily, fairly friable, "slicks" readily.

Figure WA687.31.2(c) — Feel and appearance of soils.

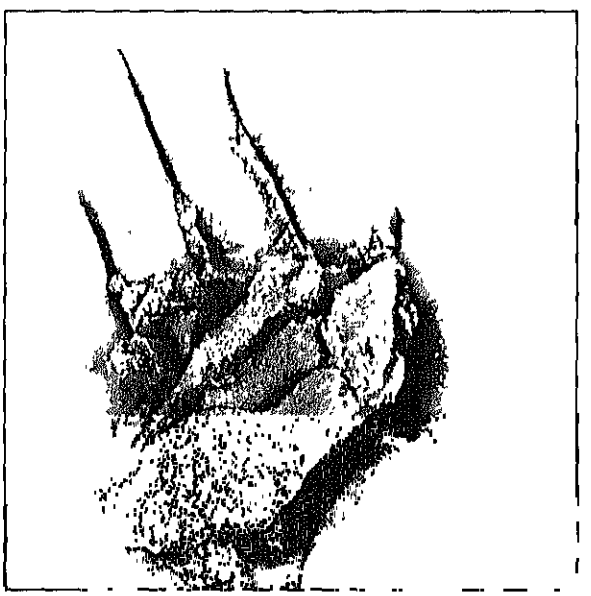
Coarse Texture — Sandy Loams and Loamy Sands



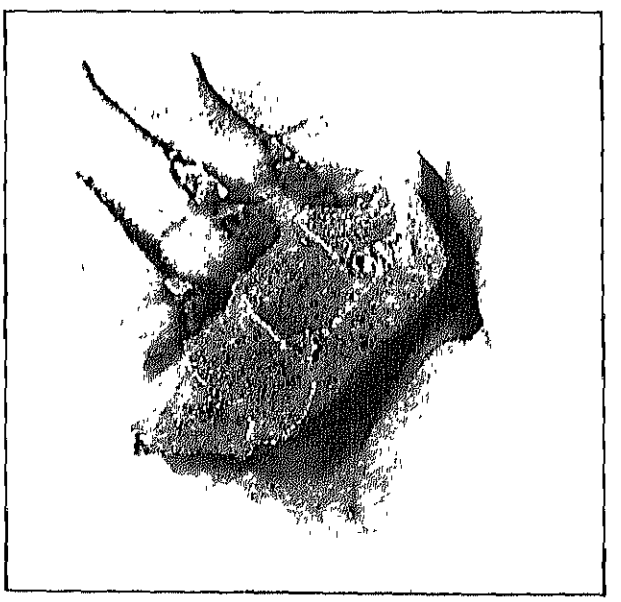
— 0 to 25% Available Moisture —
Dry, loose, flows through fingers.



— 25 to 50% Available Moisture —
Looks dry, will not form ball with pressure.



— 50 to 75% Available Moisture —
Will form loose ball under pressure, will not hold together even with easy handling.



— 75 to 100% Available Moisture —
Forms weak ball, breaks easily, will not "slick."

WA687.32(a)

(2) Measurements should be made in that part of the soil from which plant roots extract their moisture and according to the moisture-extraction pattern of the particular crop. In uniformly-textured soils, one measurement should be made at the midpoint in each quarter of the root zone. For shallow-rooted crops (maximum 3-foot deep root zones), it is probably desirable to take three measurements. To predict when to irrigate during the early stages of root development, the 6-inch measurement is all that is neede for most crops. As the root system reaches maturity, measurements from all depths are needed for a clear picture of the moisture level throughout the moisture-extraction zone.

(d) Example:

(1) Assume a Sagemoor FSL soil is to be irrigated to a 30-inch depth for pasture and samples are taken at the 6-inch, 12-inch, and 18-inch depths. Find the page of Figure WA687.31.2 showing coarse-textured soils and assume moisture conditions closely resemble the first photograph for the 6-inch depth, between the second and third for the 12-inch depth, and between the third and fourth for the 18-inch depth. The estimated percent available moisture would then be 0-25, 25-50, 50-75, and 75-100 percent respectively.

(2) From Appendix A - Irrigated Soil Tables, find the water holding capacity of the soil.

Soil	WHC	AWC	Soil Moisture Deficit		
Depth	(in/in)	(inches)	%	Ave %	Inches
0-6	0.16	0.96	(75+100)/2	87.5	0.84
6-12	0.16	0.96	(50+75)/2	62.5	0.60
12-18	0.19	1.14	(25+50)/2	37.5	0.43
18-24	0.19	1.14	(0+25)/2	12.5	0.14
24-30	0.19	1.14	Same	12.5	0.14
Total		5.34			2.15

WA687.32 Field instruments.

These instruments are generally permanently placed in a field to determine soil moisture conditions and to aid in scheduling irrigations. This is accomplished by measuring either the capillary pressure of the water in the soil or by measuring the moisture content directly.

(a) Capillary pressure of water in the soil. This indicates the energy status of the soil water or the amount of force which must be exerted to extract water from the soil. As an indicative relationship to water availability, it is possible to set up a measurable relationship between capillary pressure and moisture contact for a given soil. The two predominate instruments that measure this relationship are tensiometers and electronic resistance (gypsum) blocks.

(b) Moisture content directly. The element composition of water, being two parts hydrogen and one part oxygen, allows for the monitoring of the hydrogen element not pedominately found in soils lacking moisture. By measuring the hydrogen elements in the soil, a direct relationship can be made as to the amount of water present at varying depths. A neutron probe provides for the measurement of these hydrogen elements.

WA687.33 Tensiometers.

(a) A tensiometer consists of a sealed water-filled tube equipped with a vacuum gage on the upper end and a porous ceramic tip on the lower end. Tensiometers show "soil moisture tension" or "soil suction". This relationship varies dependent upon soil texture and whether the soil is in a wetting (irrigation) or drying phase (between irrigations when the crop is depleting available water).

(b) The tenison generated when the crop roots remove water from the soil draws water from the tensiometer tube through the porous tip and causes the gage to register a vacuum. The drier the soil, the higher the reading.

(c) When rainfall or irrigation renews the soil water supply, the higher vacuum in the tube causes water to enter the tensiometer tube, lowering the gage reading.

(d) Tensiometers are set at a station setting up a zone of moisture control in the soil. A "station" consists of two or more tensiometers of different lengths placed near one another, usually on the crop row (Table WA687.33.3).

(e) Two stations may be enough in a field with uniform soil and slope. One station should be near the upper end of the field and the other near the lower end. More tensiometers may be needed in areas where the soils or slopes vary from representative soils or slopes in the field. When placing tensiometers, the following suggestions should be followed:

(1) In furrow and corrugation systems, the ceramic tip should be angled away from the streamflow and located in the crop rooting area under the middle of the row.

(2) In orchards and vineyards, tensiometers should be placed on the sunny side of the tree just inside the drip line. In new plantings, the shallow instrument should slant into the root ball. With trickle irrigation, the instrument should be placed between the emitter and trunk, but not closer than 12-18 inches from the emitter.

WA687.33(3)

(3) Measuring stations should be in representative soil areas of the field. Tensiometers should not be placed in low spots in the field.

(4) Stations should be at points where the plant population is representative of the field.

(5) The soil around the tensiometer station should not be compacted. The station should be approached from a row other than the one in which tensiometers are located.

(6) Tensiometers should be placed after the last freeze in the spring and should be removed before the first freeze in the fall.

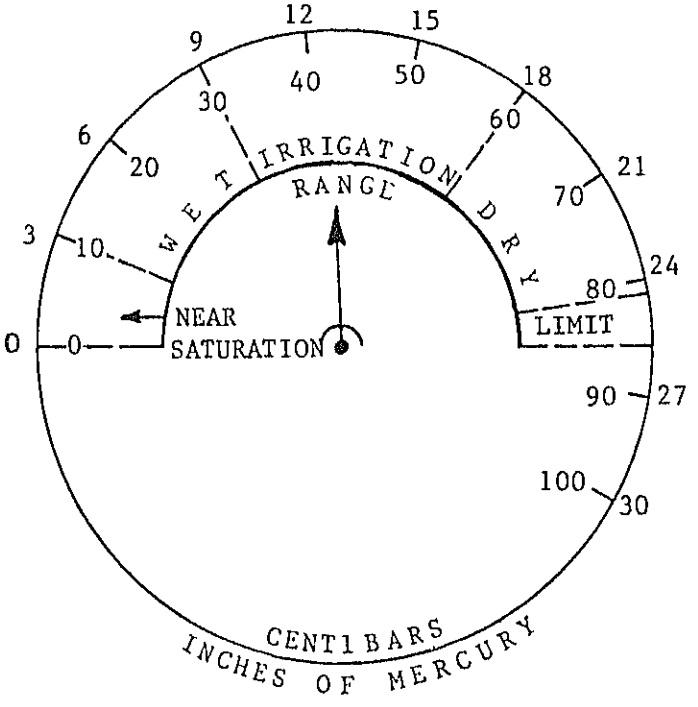


Figure WA687.33.1 - Typical Tensiometer Gage

(f) Depth of installation. Depth of tensiometer installation is determined by the root zone of the crop. This root zone depends upon the crop, stage of growth, and depth of soil. For example, for a crop such as alfalfa on a deep soil, tensiometers installed at a depth of 18 inches and 36 inches are recommended at each station. Table WA687.33.3 contains recommended depth settings for tensiometers.

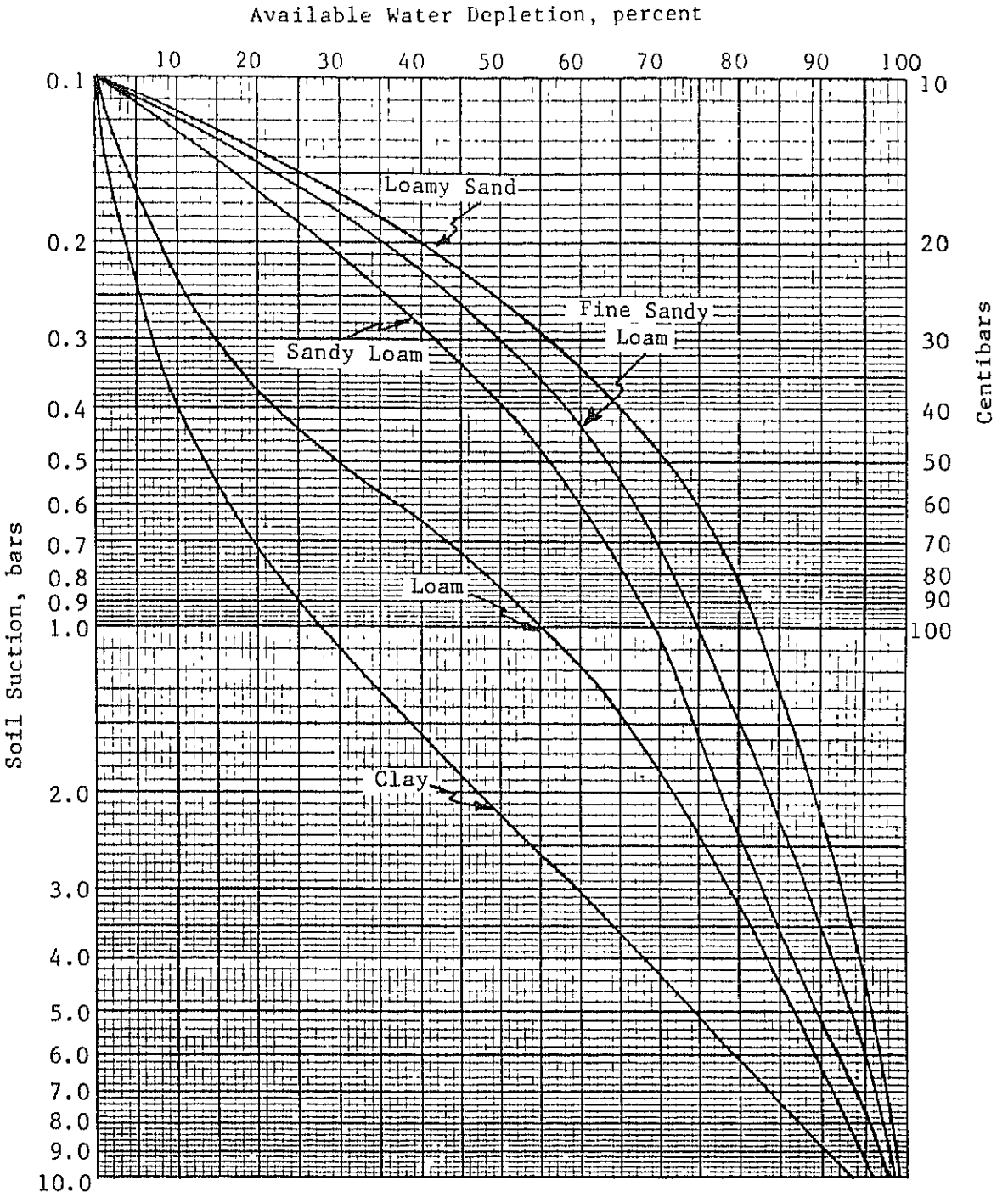


Figure WA687.33.2- Water retention curves for several soils plotted in terms of percent available water removed, redrawn with change in scale from Richards and Marsh (1961) and Taylor (1965).

WA687.33.3

Table WA687.33.3 - Tensiometer Station Depths

Irrigation Depth of Root Zone (Inches)	Shallow Tensiometer (Inches)	Deep Tensiometer (Inches)
18	8	12
24	12	18
36	12	24
48 or more (deep)	18	32

(g) Determine when to irrigate. The shallow tensiometers at both ends of the field tell when to start irrigating. The gage reading that indicates need for irrigation will be different for different soils. Guidance for interpreting tensiometer readings are given in Table WA687.33.4.

(h) Tension readings should be correlated with soil water content for a specific site if determining the volume of water to apply is desired.

(i) To schedule irrigation it is necessary to know which tensiometers should be used at a given site. The greatest soil suction will occur near the soil surface where the roots are most active. This may cause the activity of the soil water to decrease so rapidly that the range of operation of the tensiometer will be exceeded, causing air to enter the instrument.

(1) In sandy soils, tensiometers in the active root zone should be used to schedule irrigation.

(2) For clayey soils, the soil suction will usually exceed the operating range of the instrument before it is necessary to irrigate. The graph in Figure WA687.33.2 shows that it takes about 2.0 bars (200 centibars) of suction to reach a 50 percent water depletion level for a clay. At 0.8 bar or 80 centibars the water depletion level would be about 25 percent. Tensiometers are not generally recommended for clayey soils unless high moisture levels are to be mantained.

(3) Soil suction values that indicate need for irrigation will differ for different soils. Table WA687.33.4 gives generalized range interpretations. Figure WA687.33.2 and Figure WA687.39.2 give interpretations in percent and inches per foot depletion respectively.

Table WA687.33.4

Interpretation of Tensiometer Readings

*Dial Reading		Interpretation
Inches of Mercury	Centi-bars	
Nearly Saturated	0	Near-saturated soil often occurs for a day or two following irrigation. Danger of water-logged soils, high water table, poor soil aeration, or the tensiometer may have broken tension, if readings persist.
3	10	
Field Capacity	10	Field capacity. Irrigation discontinued in this rang to prevent waste by deep percolation and leaching of nutrients below the root zone. Sandy soils will be field capacity in the lower range, with clayey soil at field capacity in the upper range.
6	20	
9	30	
Irrigation Range		Usual range for starting irrigation. Soil aeration assured in this range. In general, irrigations star at readings of 30-40 in sandy textured soils (loamy sands and sandy loams. Irrigations usually start fr 60-80 on loamy soils, (very fine sandy loams and sil loams). Note that clay soils (silty clay loams, sil clays, etc.) irrigations would usually start from 150-200. Starting irrigations in this range insures maintaining readily available soil moisture at all times.
12	40	
15	50	
18	60	
Dry		This is the stress range for all but fine textured soils. However, crop not necessarily damaged or yie reduced. Some soil moisture is readily available to the plant but is getting dangerously low for maximum production.
21	70	
24	80	Top range of accuracy of tensiometer, readings above this are possible, but the tensiometer will break tension between 80 to 85 centibars. For this reason they are generally not adapted to fine textures soil

*Indicative of soil conditions where the tensiometer is located. Judgment should be used to correlate these readings to general crop conditions in the field.

WA687.34

WA687.34 Electrical resistance blocks.

(a) The electrical resistance block system uses small gypsum blocks and a portable resistance meter to measure electrical resistance which can be related to soil moisture content.

(b) Gypsum blocks are made by casting gypsum around a pair of stainless steel wires or wire grids. These wires are attached to lead wires which are plugged into the meter. When the blocks are placed in contact with the soil, the moisture content of the gypsum tends to equal the moisture content of the soil. Because the electrical resistance between the wires in the gypsum varies with the moisture content, a measurement of electrical resistance by the meter is a good indication of the soil moisture content. The drier the soil, the greater the electrical resistance, and visa versa. Erroneous readings may be obtained with high soil salinity. Some meters are constructed so that a low gage reading indicates low soil moisture and a high gage reading indicates high soil moisture. Some meters have the capability to read directly in bars suction.

(c) Placement of blocks. The location and depth of installation of these blocks is the same as for tensiometers. The gypsum blocks should be placed in the rooting zone of the crop as early in the season as is practical and left in the soil throughout the growing season.

(1) The electrical resistance blocks should be thoroughly soaked in a pail of water before installing (follow manufacturer's recommendations for soaking time). Soaking removes air from the blocks and assures accurate readings of the soil moisture. This is a good time to read all blocks and discard the faulty ones.

(2) A soil probe or auger can be used to bore a hole on the row slightly larger than the electrical resistance block. The hole should be angled toward the furrow.

(3) The last three inches of soil removed from the hole should be crumbled and put back into the hole. About 1/2 cup of water should be poured into the hole so a slurry of mud is formed in the bottom.

(4) The blocks should be pushed into the hole with the soil probe, or 1/2-inch diameter electrical conduit, setting them solidly in the bottom with a firm push of the probe. A firm contact between the blocks and surrounding soil must be made.

(5) The hole should then be filled with soil, three or four inches at a time, tamping the soil firmly as the hole is filled.

(6) The wire leads from the two blocks should be brought to a single station, midway between the holes and tied to a stake with the wires separated. The wires should be color coded with colored plastic tape or other means of identification.

(d) Meter readings as related to soil moisture.

(1) The following data and the data shown in Table WA687.34.1 can be used as a guide to interpret meter readings as they relate to soil moisture conditions.

Electrical Resistance Readings for
Starting Irrigation of Corn and Grain Sorghum

Soil texture	Meter Readings on Shallow Block	
	Meter Readings	Electrical Resistance (ohms)
Loamy sands Sandy loams	120	3200
Very fine sandy loams Silt loam	100	4800
Clay loams Silty clay loams	80	7000

(2) There will be differences in electrical resistance readings due to frequency of the A.C. resistance meters. Each company that sells electrical resistance meters for measuring soil moisture has recommendations which are provided with their meters.

(e) Determining when to irrigate. The meter readings that indicate the need for irrigation will be different for various textured soils. Irrigation should be started when the average meter readings from the shallow blocks reach the meter readings indicated in the tables.

(f) Electrical resistivity readings should be calibrated with the soil water content for the soil profile at each station if the desired volume of irrigation water to be added is to be calculated.

(see table next page)

WA687.34.1.

Table WA687.34.1
Interpretation of Readings on
Electrical Resistance Meters

	Electrical Resistance		Interpretation
	Ohms	Meter* Readings	
Nearly Saturated	Less than 200	200 to 180	Near saturated soil often occurs for a few hours following irrigation. Danger of water-logged soils, a high water table, poor soil aeration if reading persists for several days.
Field Capacity	300 to 500	180 to 170	Field capacity. Irrigations discontinued in this range to prevent waste by deep percolation and leaching of nutrients below the root zone.
Irrigation Range	3200 to 7000	120 to 80	Usual range for starting irrigations. Soil aeration is assured in this range. Starting irrigations in this range insures maintaining readily available soil moisture at all times.
Dry	Above 7000	Less than 80	This is the stress range. However, crop not necessarily damaged or yield reduced. some soil moisture is available to the plant but is getting dangerously low for maximum production.

* Indicative of soil conditions where the electrical resistance block is located. Judgment should be used to correlate these readings to soil moisture conditions in the field.

WA687.35 Neutron probe (soil moisture gage).

(a) The neutron probe provides a fast, accurate measurement of the soil water content except in the upper 9" of soil which requires special calibration or use of another method. The probe is used to monitor the soil water status at the same location, at any depth and frequency desired.

(b) The neutron probe can be used for the following purposes:

- to determine when to irrigate (scheduling);
- how much to apply;
- moisture extraction by depth for various crops;
- distribution of moisture throughout the field (problem solving);
- to estimate consumptive use; and
- to determine depth of penetration or rate of movement of water in the soil (problem solving).

(c) To use the neutron probe, it must be calibrated so that readings or count rate is related to actual soil water content. Soils have different chemical properties that affect the neutron readings and, therefore, calibration curves must be developed for each soil series. To calibrate the probe, gravimetric measurements must be made and related to the neutron count. Use of the later models that provide readouts directly in inches of water must be calibrated to correlate count rate to actual-soil water content. After calibration, corrections can be input into the machine so that readout is actual soil-water content.

(d) Permanent access tubes must be installed at each site. These tubes must be aluminum, steel, or PVC. Special calibration is needed for each material.

(e) The Federal Nuclear Regulatory Commission (NRC) regulations require a radioactive materials license for the possession and use or reactor-produced isotopes. Most agencies require formal training of the users by an approved training agency. Regulations require that nuclear devices be kept in a secure, locked storage area.

WA687.36 Special soil moisture measuring equipment.

Gravimetric methods or a procedure for determining the volume of water in a given volume of soil, by determining the percentage of moisture compared to the dry weight of soil, have been used historically. Today this method is used primarily as a calibration tool for the above methods. Two methods exist for accomplishing this procedure, the oven dry method and the calcium carbide gas pressure method (Speedy moisture meter).

WA687.37 Oven dry method.

(a) Equipment required.

(1) Seamless cans or other suitable container with a capacity of three ounces or more to contain sample for drying.

(2) Triple-beam balance with 200-gram capacity, accurate to 0.1 gram.

WA687.37(a)(3)

(3) Drying oven capable of maintaining a temperature of 220°F to 240°F (104° C to 116°C) or a suitable microwave oven.

(4) Oven thermometer to check temperature of the oven (for standard oven).

(5) Bulk density sampler (Madera).

(b) Procedure.

(1) Select a representative sample of the soil to be tested and place in aluminum can. Place the lid on the can. Weigh the wet soil plus the can and record the weight on Figure WA687.37.1: WW = Weight of container + soil + water.

(2) Place the container with soil in the oven with the container open and dry the soil at a temperature between 220°F to 240°F until it attains a constant weight. It is important that all moisture be removed from the sample, and may require a time period of 24 hours. If the drying time is less than 12 hours, weigh the sample, replace in the open for an additional hour, and re-weigh. If there has been no weight change during the second drying, the water content determination will be correct.

(3) Remove the can of oven-dried soil from the oven, cool the container with lid closed, and weigh. Record this weight on Figure WA687.37.1 as: DW = weight of container + dry soil.

(4) Empty the container, wipe clean, and weigh. Record the weight as: TW = Tare weight of container.

(5) Compute the water content of the soil by the formula:

$$\% \text{ moisture} = \frac{WW - DW}{DW - TW} \times 100$$

(6) In lieu of a standard drying oven use a microwave oven. Weigh the wet soil plus the container and record as WW was above. Dry the sample for 15 minutes, remove and let cool. Dry sample for an additional 10-15 minutes, let cool and weigh the dry soil plus container, record as DW. Extend the drying time as needed if the sample has not reached constant weight. Be sure the container is suitable for use in the microwave oven. Compute the percent moisture by the same equation as described in (5) above. Be sure to include the container in the tare weight. See Figure WA687.37.1.

(7) Determine the bulk density (Dbd) by the following equation:

$$Dbd = \frac{DW}{Vol}$$

Where DW = net dry weight
Vol = volume of sample

WORK SHEET

Figure WA687.37.1

PHYSICAL PROPERTIES OF SOIL
FOR
IRRIGATION WATER MANAGEMENT

Owner _____ State _____ County _____ Legal Description _____ Date _____

Sample Number	Sample Layer	Sample Depth	Sample with Container			Tare	Net Dry Weight	Volume of Sample	Moisture Percentage	Bulk Density	Total Water	Total Water for Evaluation	Soil Series
			Wet Weight	Dry Weight	Water Loss								
	d(in)	(in)	WW(g)	DW(g)	Ww(g)	TW(g)	Dw(g)	Vol(cc)	%	ρb_d	in/in	in	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)

Calculations by column:

(1) Show sample container No.
(2) Show layer sample represents (d), (e.g., 10-20")
(3) Show sample depth, (e.g., @ 15")
(4) Wet weight of soil + container = WW
(5) Dry weight of soil + container = DW
(6) Water loss, WW(4) - DW(5) = Ww
(7) Weight of container (Tare) = TW
(8) Net dry weight of soil (Dw) = DW - TW
(9) Volume of sample = (from Ely, Madera, balloon or sand cone)[1/]
(10) % moisture (dry weight basis), Pd = Ww(6) ÷ Dw(8)
(11) Bulk density (dry weight basis) = Db_d = Dw(8) ÷ Vol(9) NOTE: Units grams & cc
(12) Total soil moisture in sample = Db_d(11) x Pd(10) x 1 inch ÷ 100 = inch of water per inch of soil
(13) Total soil moisture in sample layer for evaluation = (12) x (2) = inch of water per sample layer
(14) Show soil series, (e.g., Fury SiL)

1/ This volume should be determined within the irrigation moisture range, (e.g., 50% to 100% AWHC).

687.37(a)(7)

'or a Madera sample this is simply the drying of the sample extracted at a determined depth by the Madera and divided by the known volume of the era (generally 60cc).

or an Eley volumeter, the procedure is slightly more complex after racting the sample at the predetermined depth:

(i) Prepare the tool for use by backing out the treaded stem until piston rests against the end of the cylinder (fully extended position).

(ii) Dig a small trench to the depth of soil to be tested and ition the tool against the side of the soil profile. A vertical sample may ɔ be taken from an auger hole drilled to the depth where the sample is to taken.

(iii) Press the tool into the soil to the depth flange. Remove the l with sample.

(iv) Extrude the sample to the zero mark on the threaded stem and .ke off flush with the cutting edge of the cylinder with a knife.

(v) With zero as an index, extrude the sample by turning the knob shaving of a sufficient sample for weighing and drying into the sampling Weigh and dry as above. For a Speedy test, shave off small slices into weighing plan until a 26-gram sample is obtained. Shade the weighing pan e performing this test. Then run the test as indicated to determine the ent moisture.

(vi) Read the volume of weighed soil sample in cubic centimeters ctly on the threaded stem and vernier.

(vii) Determine the bulk density of the sample. Using the volume of weighed sample and the moistue percentage by dry weight, compute th bulk ity in grams per cubic centimeter. Figure WA687.37.1 provides for a step tep recording and calculation of the data.

7.38 Calcium carbide gas pressure method (Speedy Moisture Tester).

(a) Soil moisture, expressed as a percentage of the dry weight of the is obtained by determining the gas pressure which results when calcium .de combines chemically with the moisture content of a soil sample. A ɪrsion chart relates gas pressure values to percent moisture on a dry ıt basis. A more detailed explanation of the speedy moisture testing ɔd is given in Chapter 15 of the Engineering Field Manual.

b) Equipment required.

(1) Carbide-type moisture tester - 26 gram size.

(2) A 26-gram scale for weighing the sample to be tested.

(3) An Eley Volumeter or Madera Sampler to determine the volume of the sample to be tested. Note: The Speedy Moisture Tester can be used in conjunction with the Madera sampler to determine % moisture levels.

(4) Two steel balls weighing approximately 0.4 pounds each. (This may not be needed on normal irrigated soils.)

(5) Calcium carbide reagent.

(6) Calibration chart to convert wet-weight pressure gage reading to dry-weight percentage.

(7) Knife.

(c) Procedure.

(1) Place three measures of calcium carbide and two steel balls in the large chamber of the moisture tester. (One scoop for the small 6 gram speed unit).

(2) Using the Eley Volumeter, obtain an undisturbed sample of the soil profile and perform the test in Part WA687.37(a)(7)(v).

(i) Record the reading on the volumeter.

(ii) Slowly squeeze out 26 grams of the soil from the volumeter onto a scale. Use the knife to slice off the correct amount.

(iv) This procedure is for the 26-gram sized moisture meter. If the moisture content of the 26-gram sample exceeds the limit of the pressure gage, a half-sized sample can be used, and the percent indicated on the dial is then doubled.

(3) Place the soil sample in the cap of the tester; then with the pressure vessel in a horizontal position, insert the cap in the pressure vessel and tighten the clamp to seal the cap to the unit.

(4) Raise the moisture tester to a vertical position so the soil in the cap falls into the pressure vessel (after the vessel is sealed).

(5) Holding the moisture tester horizontally, manually rotate the device for ten seconds so that the steel balls are put into orbit around the inside circumference, and then rest for 20 seconds. repeat the shake-rest cycle for a total of three minutes. Do not allow the steel balls to fall against either the cap or the orifice leading to the dial, since this might cause damage.

(6) With the instrument in a horizontal position, read and r[illegible] gage pressure. Read the pressure gage to the nearest 0.1 p[illegible] the gage reading to percent dry weight by use of the conversi[illegible] record.

WA687.38(c)(7)

(7) Release the pressure slowly, empty the contents, and clean the cap for the next test. When the sample is dumped, examine for lumps. If the soil sample was not completely broken down, increase the shake-rest cycles by one minute on the next test; clean the tester before next sample.

(d) Precautions in the use of the carbide-type moisture tester.

(1) Tests should not be made of saturated high-organic soils.

(2) Make a preliminary test of any mineral soil with an apparent high moisture level using a 13-gram, rather than a 26-gram, sample to reduce the possible pressure generated in the vessel.

(3) In making any test, observe the pressure rise immediately after raising the pressure vessel to a vertical position. The initial pressure increase will be rapid; and after a few seconds, it will be steady until the tester is rotated. If the initial gage reading approaches 20-percent moisture, release the pressure immediately by loosening the clamp enough to allow the gas to escape.

WA687.39 Moisture percentage at wilting point.

(a) The methods described previously in the guide measure total moisture content of the soil. To determine available water capacity, the wilting point (percent moisture) must be determined.

(b) From laboratory or other dependable data, obtain the moisture percentage at 15 atmosphere's of soil moisture tension for the soil to be irrigated. When this information is not available, the following values may be used for each soil layer:

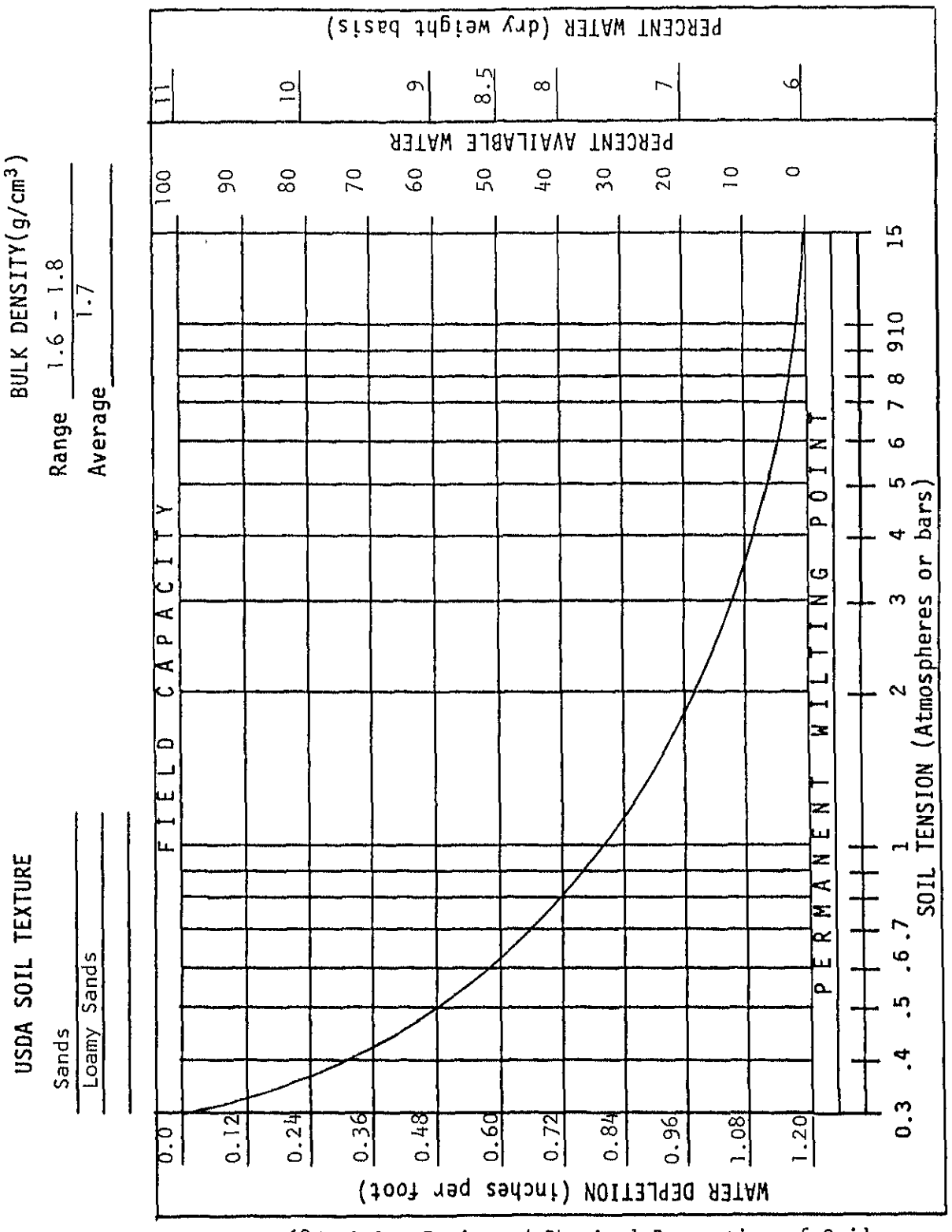
Texture	P_w	Texture	P_w
Clay	25	Very fine sandy loam	4
Silty clay	19	Fine sandy loam	4
Sandy clay	17	Sandy loam	4
Silty clay loam	13	Loamy fine sand	3
Clay loam	13	Loamy sand	3
Sandy clay loam	11	Fine sand	2
Silt loam	5.5	Sand	2
Loam	7		

P_w is expressed as percent water on a dry-weight basis. The values given do not apply to soils having soil fragments larger than 2.0 millimeters. Many soils in Washington have had moisture content at 15 atmos lab test completed. Refer to SCS Soil Survey Report basic data.

Table WA687.39.1 - Estimated Physical Properties of Soils

Soil Texture	Bulk Density	Field Capacity (%)	Permanent Wilting Point (%)	Total Available Moisture	
				Dry Weight (%)	Inches Per Foot
Sand	1.55-1.80	6-12	2-6	4-6	0.8-1.2
Average	1.64	9	4	5	1.0
Sandy Loam	1.40-1.60	10-18	4-8	6-10	1.1-1.8
Average	1.50	14	6	8	1.4
Loam	1.35-1.50	18-26	8-12	10-14	1.7-2.3
Average	1.40	22	10	12	2.0
Clay Loam	1.30-1.40	23-31	11-15	12-16	2.0-2.6
Average	1.35	27	13	14	2.3
Silty Clay	1.25-1.35	27-35	13-17	14-18	2.2-2.8
Average	1.30	31	15	16	2.5
Clay	1.20-1.30	31-39	15-19	16-20	2.8-3.0
Average	1.25	35	17	18	2.7

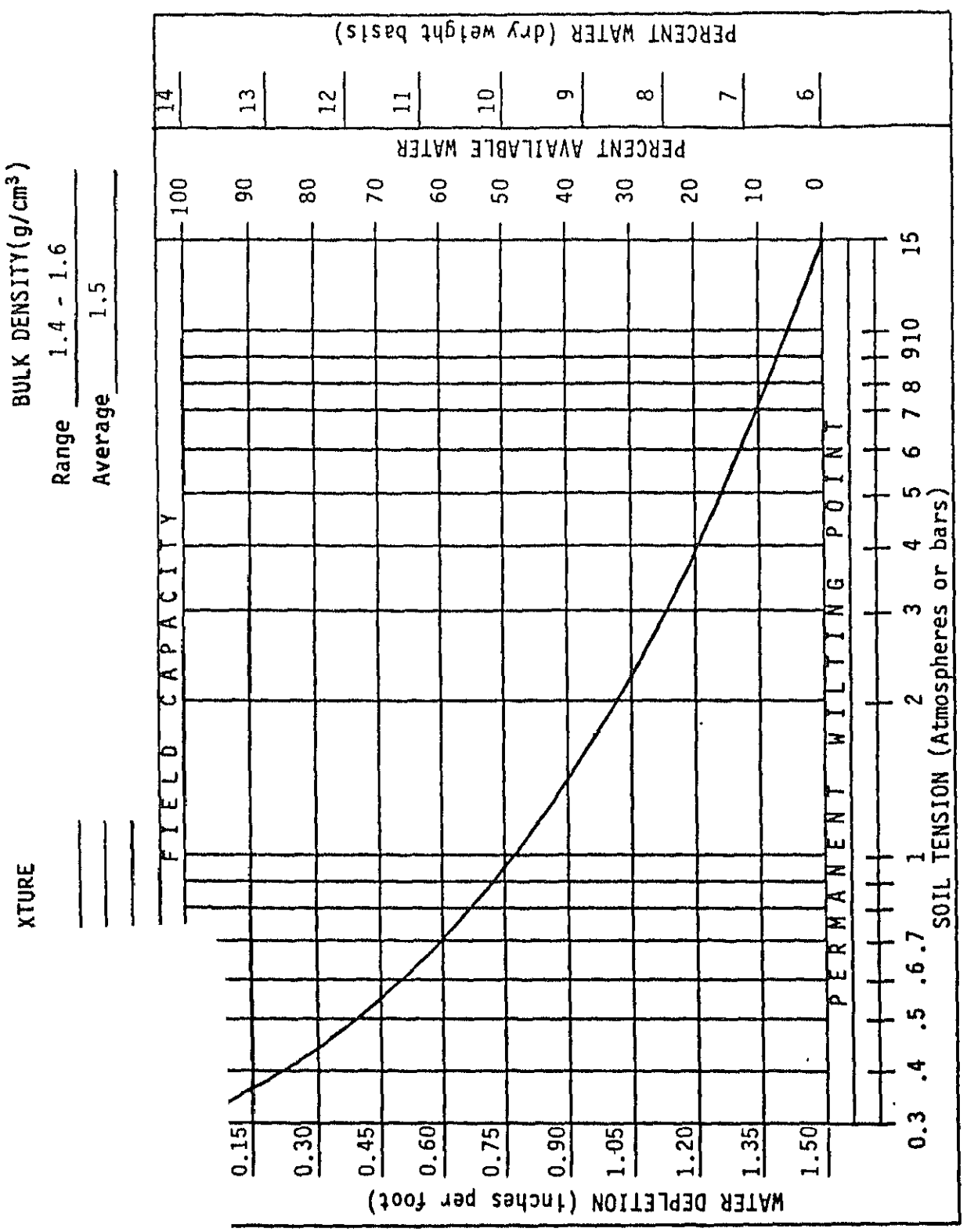
(c) Th following figures (Figures WA687.39.2) have been developed to aid in determining the amount of moisture depleted (inches per foot) for some general soil textures. These figures will give general figures for all previously discussed methods, whether moisture measurement is in tension, percent by dry weight or percent of available moisture.



Reference: Texas ID No. 210-19, Training Guide-Worksheet for Soil Water Needs.

Figure WA687.39.2 - Estimated Physical Properties of Soils

WA687.39.2



Reference: Texas ID No. 210-19, Training Guide-Worksheet for Soil Water Needs

WA687.39.2 - Estimated Physical Properties of Soils

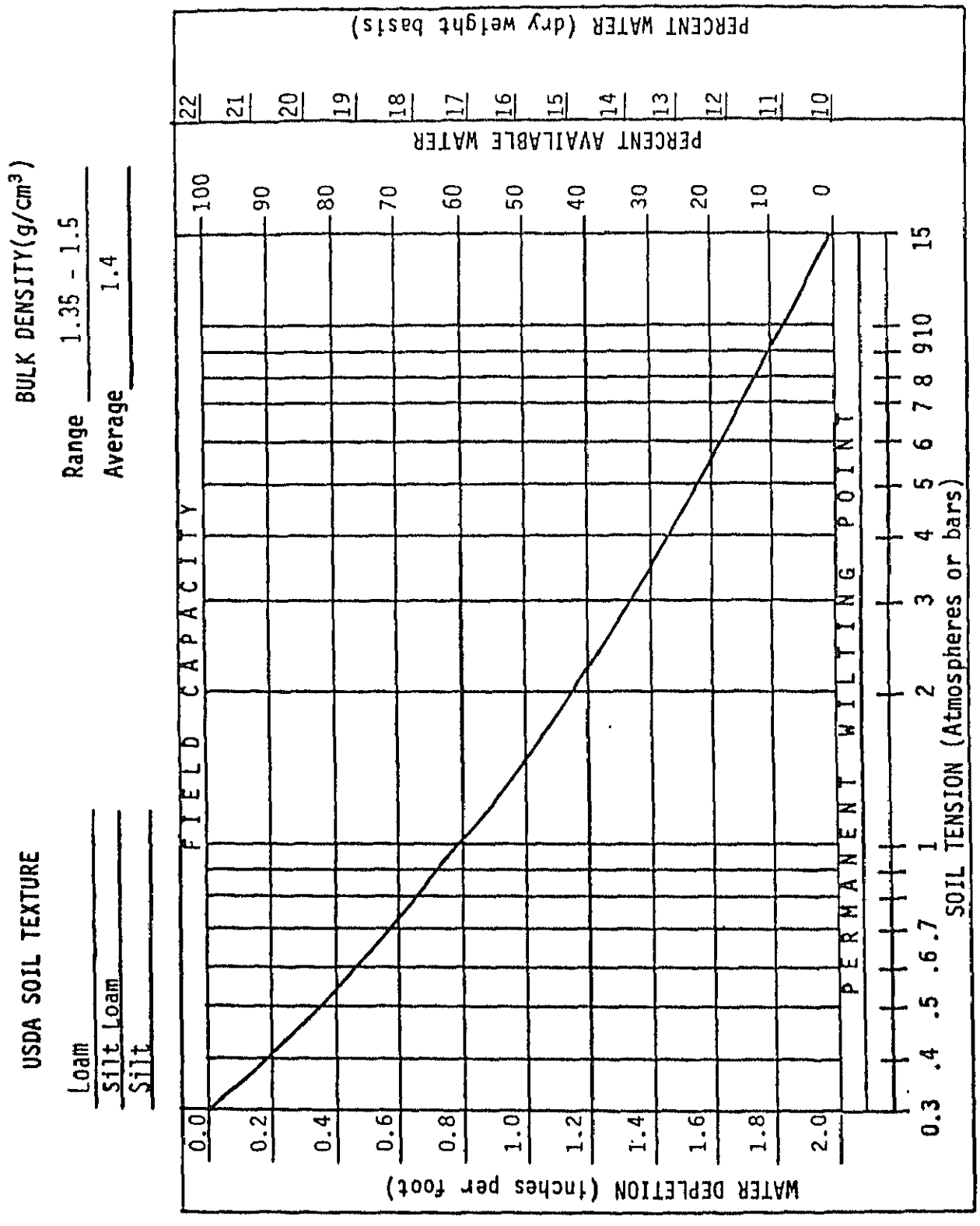
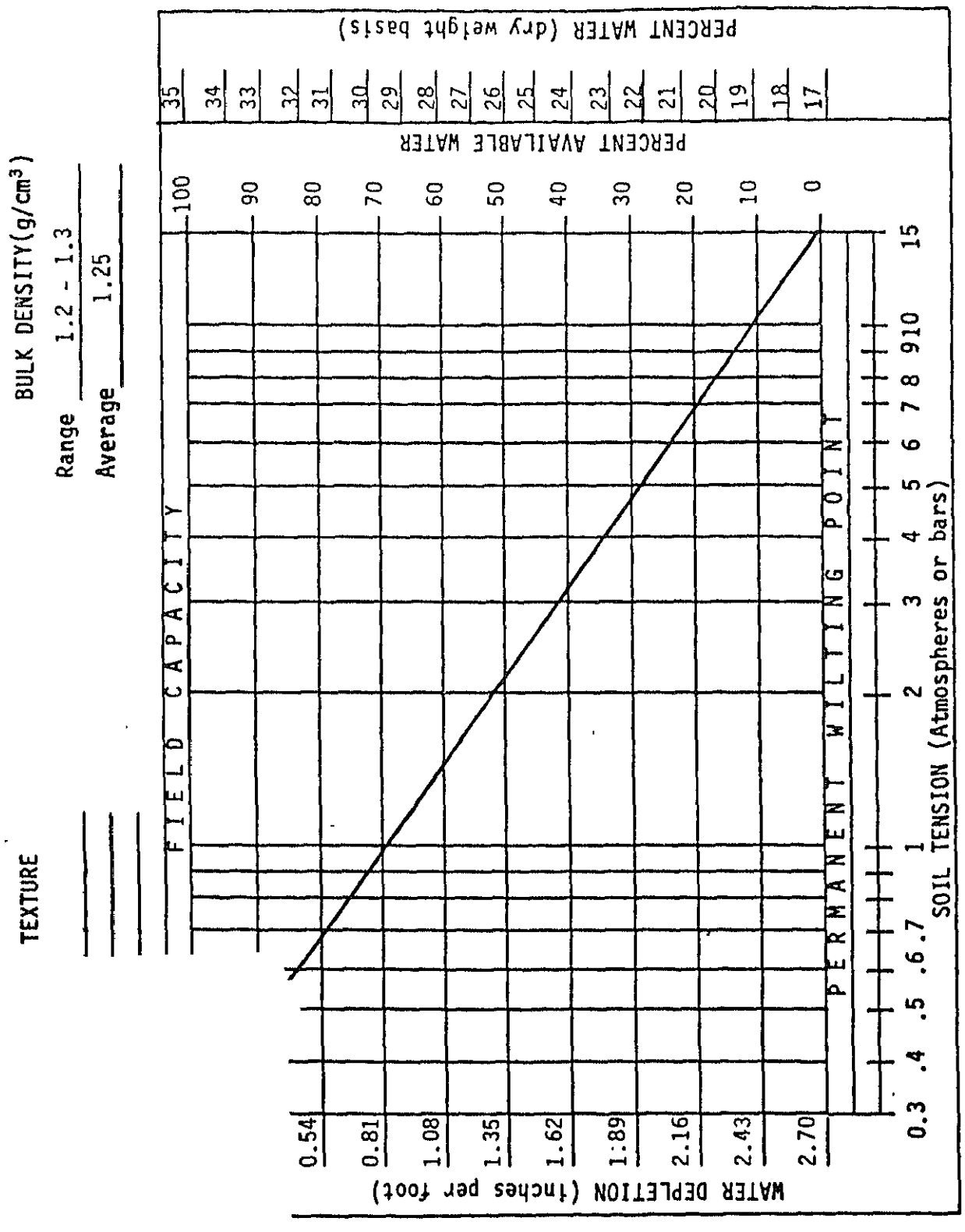


Figure WA687.39.2 - Estimated Physical Properties of Soils

WA687.39.2



Reference: Texas - ID No. 210-19, Training Guide - Worksheet for Soil Water Needs

7.39.2 - Estimated Physical Properties of Soils

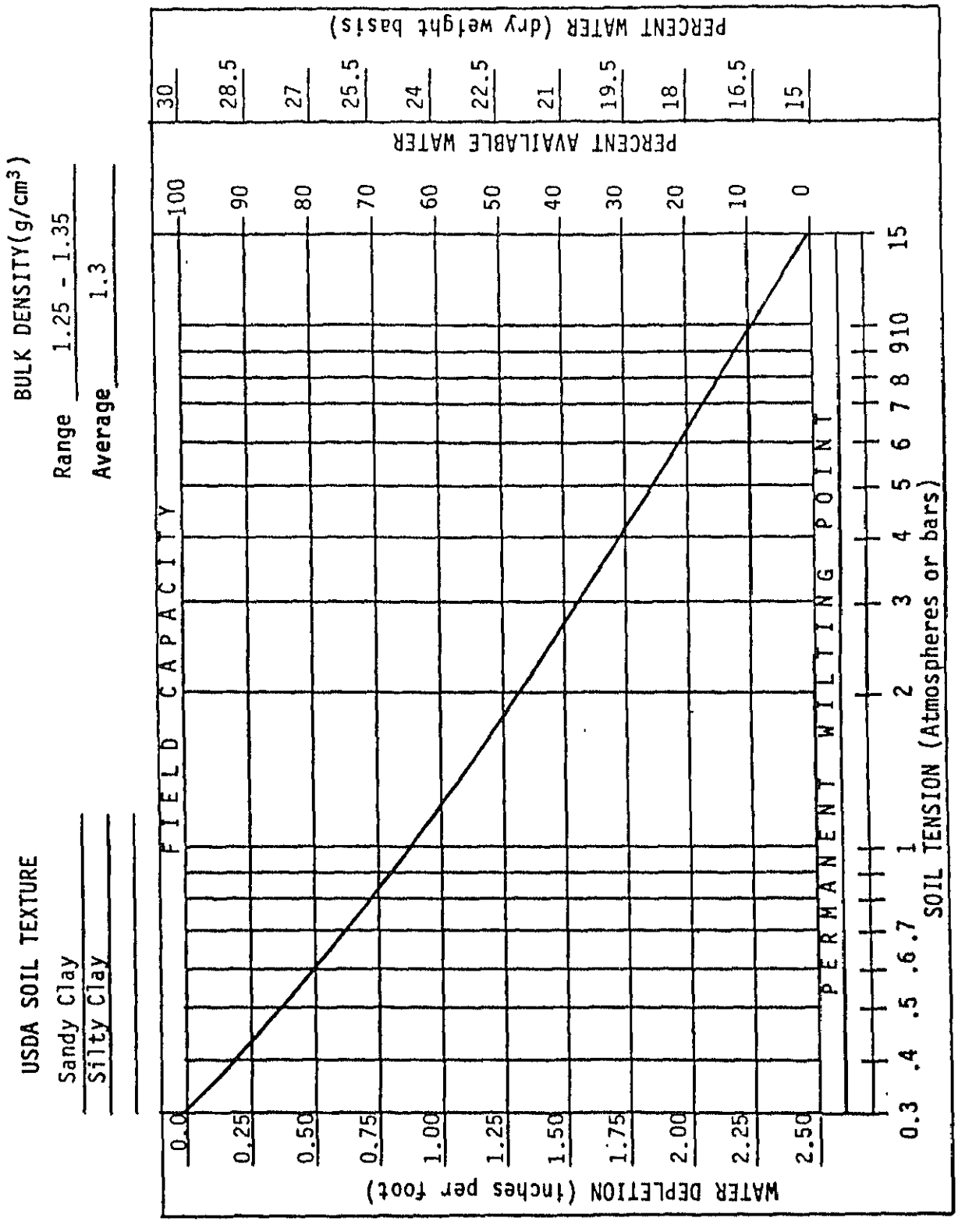


Figure WA687.39.2 - Estimated Physical Properties of Soils

WA687.39.2

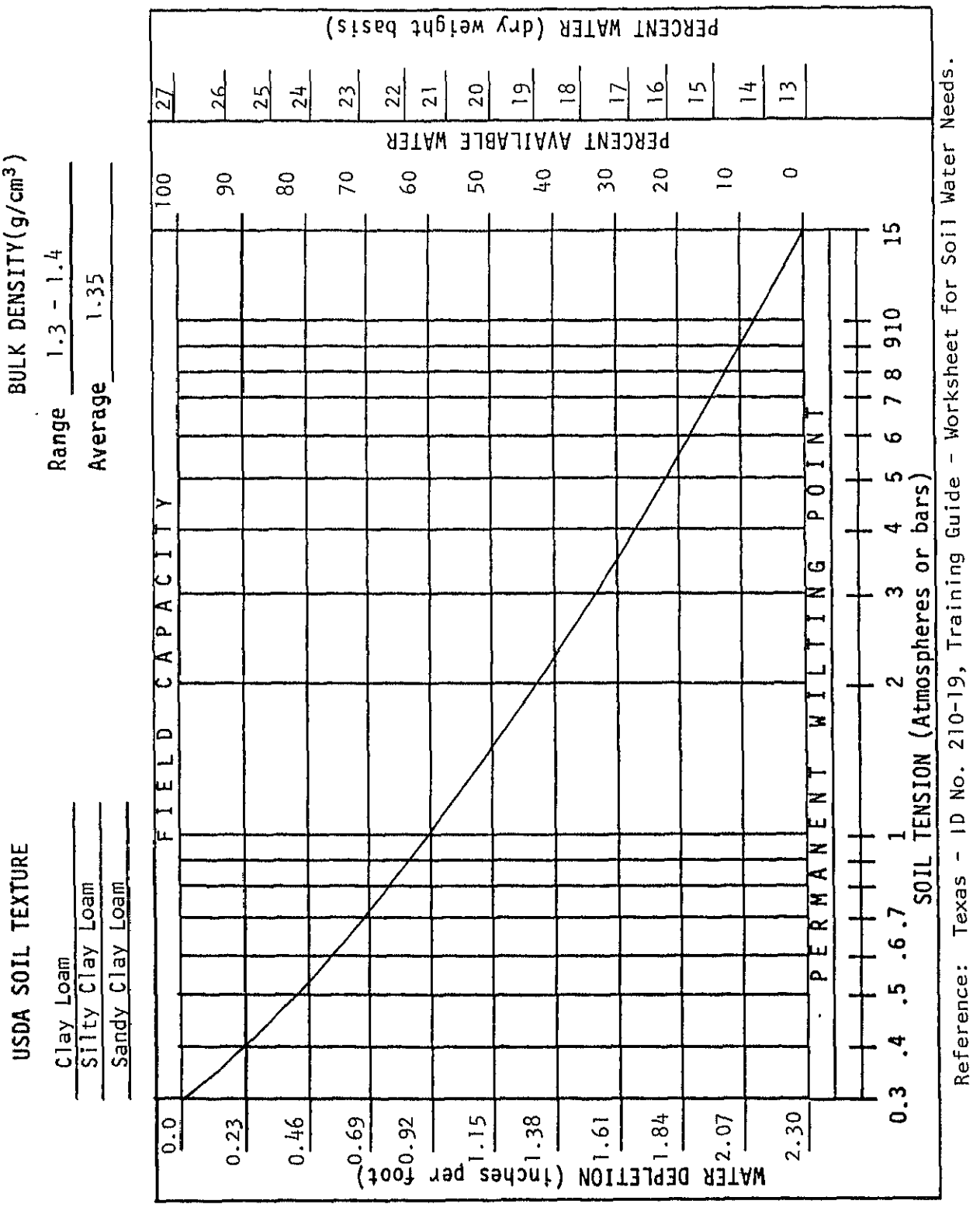


Figure WA687.39.2 - Estimated Physical Properties of Soils

SUBPART D - WATER BUDGETS

WA687.40 Bookkeeping methods.

Various methods are used to determine or forecast irrigation data based upon historic trends or real time weather data. The first step in using any of the following methods is to determine the soil moisture useable by the crop (Part WA687 C). It is recommended that all of these methods be corrected to true soil conditions by periodically verifying soil moisture.

(a) Evaporation pan method.

(1) This method is based on real time weather data. It uses a relationship of crop consumptive use to the evaporation from standard evaporation pans. Daily evaporation pan data is published in many local newspapers in irrigated areas. Monthly average crop use pan factors are contained in Appendix B for all crops. For low water holding capacity soils, short hot spells or systems that apply light and frequent applications, this pan factor should be adjusted upwards by 10 percent. The use of pan factors allows for the scheduling of irrigations based upon varying crop uses through the season.

(2) Example. Crop: Apples w/cover
Location: Prosser
System Application: 2 inches net

Find: a. Allowable pan evaporation between irrigations under normal weather conditions for May, June and July.
b. Allowable pan evaporation between irrigations under short hot spell in June and July.

Solution: a. $\text{Allowable Pan Evaporation} = \frac{\text{System Application (Net)}^{1/}}{\text{Pan Factor}}$

1/ System application may be replaced with allowable soil depletion based upon crop and stage of growth.

Month	Pan Factor	Allowable Evaporation
May	0.68	2.94 inches
June	0.92	2.17 inches
July	1.00	2.00 inches

Note that allowable evaporation is greater than system replacement for May and June.

b. For hot spells, modify the pan factor by 10%.

Month	Pan Factor	Modifer	Modified Pan	Allowable Evapoation
June	0.92	1.1	1.01	1.98 inches
July	1.00	1.1	1.10	1.82 inches

WA687.40(2)

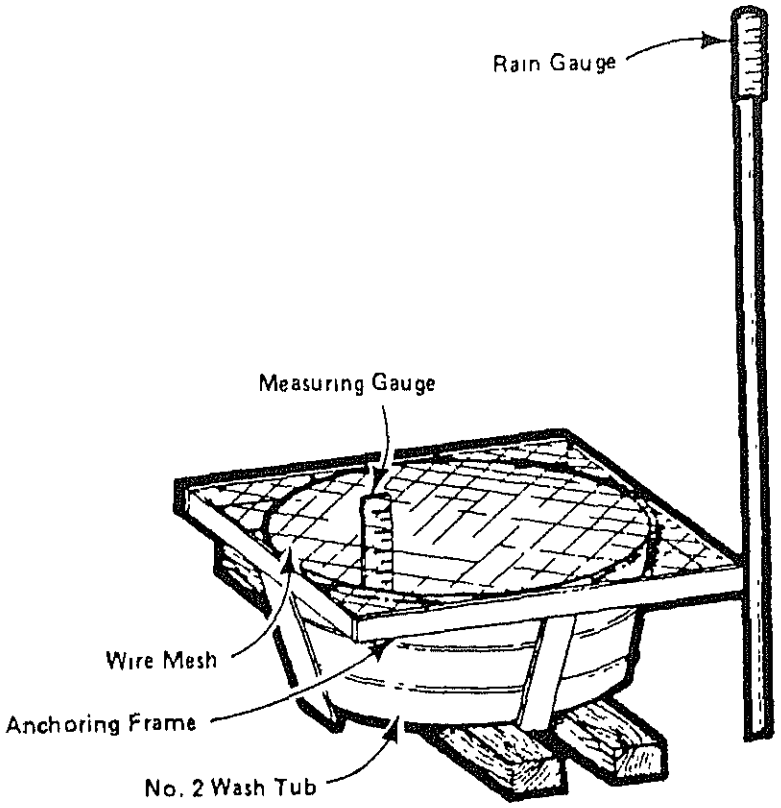
Would be: Irrigation Frequency = $\frac{\text{Allowable Evaporation}}{\text{Average Daily Evaporation (from newspaper or radio)}}$

May = 7+ days June = 5+ days July = 5 days

For b. June = 5 days July = 4.5+ days

(3) Where evaporation pan data does not exist or the operation is a significant distance from the evaporation pan site, a simplier pan has been developed. Montana State University research indicates that a tub 20 inches in diameter and 10 inches deep, such as a No. 1 or No. 2 wash pan provides fairly reliable data when used in conjunction with a rain gage. The measured evaporation from these pans is multiplied by 0.65 to approximate Weather Bureau pan evaporation unless placed directly in an irrigated field, where no correction is needed. Figure WA687.40.1 shows a typical installation.

Figure WA687.40.1 - Montana Washtub Evaporation Pan



(b) Moisture accounting method.

(1) Consumptive use values are used to maintain a daily inventory of the soil moisture remaining in the profile. Starting at a time when the moisture level in the soil profile is known as a "bookkeeping" system is set up whereby the computed consumptive use is subtracted daily from the recorded available moisture in the profile. Rainfall and irrigation amounts are added to the moisture balance on the days of their occurrence. The success of this method depends on accurate measurements of the waterholding capacity of the soil, determination of daily consumptive use rates, and measurement of rainfall and irrigation amounts.

(2) Consumptive use mass curves are developed by plotting the predicted monthly consumptive use for the particular crop in Appendix B at the end of the given month. The next month is added to the prior month value and plotted at the end of its month. When all values are plotted, a curve is developed between the points. Monthly plotting paper such as K&E, 1 year by 250 divisions (Figure WA687.40.2), works well for this, however any grid paper can be used.

(3) By determining the available moisture at the start of the growing season and knowing the system application, the approxiate date of irrigation can be determined.

(i) Plot the available moisture at the beginning of the season, on the curve developed by (2) above, along the vertical axis. By moving horizonally right until this intersects the curve, the date of first irrigation can be approximated.

(ii) From this point, add in the volume of application or allowable soil deficit and extend vertically. Moving across horizontally will give the next approximate irrigation date. This can be projected through the season to approximate irrigation dates.

(iii) The approximation procedure can be refined by adding measurable precipitation to the application amount and selecting the next date.

(iv) This system is useable in approximating irrigation idle periods. The actual conditions will vary from year to year and periodic measurement of soil moisture must be made to recalibrate irrigation periods. Not doing so allows for the possibility of inadequate or excess soil moisture.

(4) Figure WA687.40.3 reflects approximate scheduling using the above procedure assuming no measurable seasonal precipitation.

(5) More information on this procedure can be found in the Engineering Field Manual, Chapter 15.

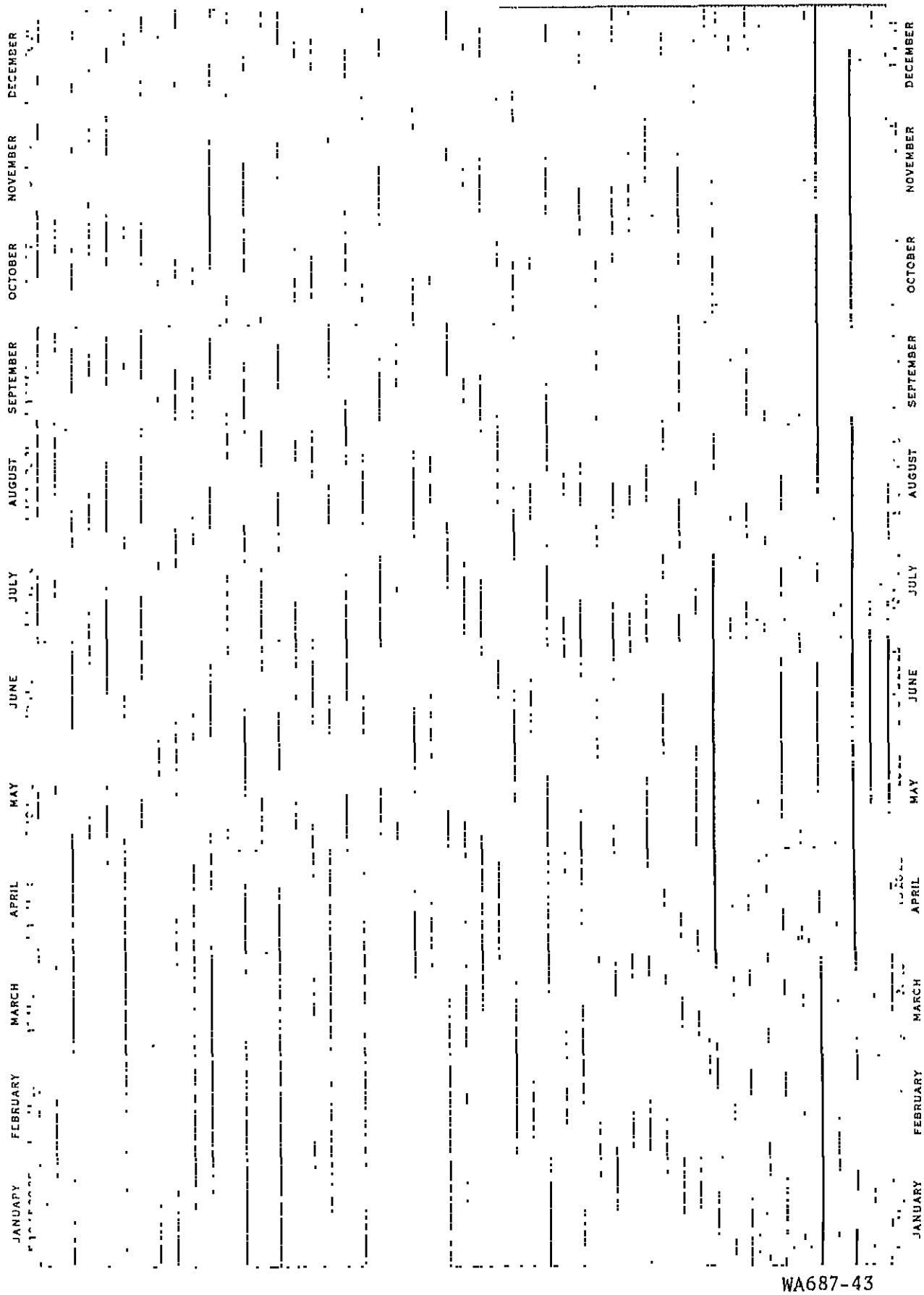
WA687.40(c)

(c) IMS method (evapotranspiration - ET)

(1) The Irrigation Management Service program is conducted in certain areas of the west by the Bureau of Reclamation in Bureau project areas. It is accomplished through the efforts of the Bureau project areas. It is accomplished through the efforts of the Bureau in cooperation with irrigation and water districts and other water user organizations. It involves scheduling for the purpose of optimum use of irrigation water.

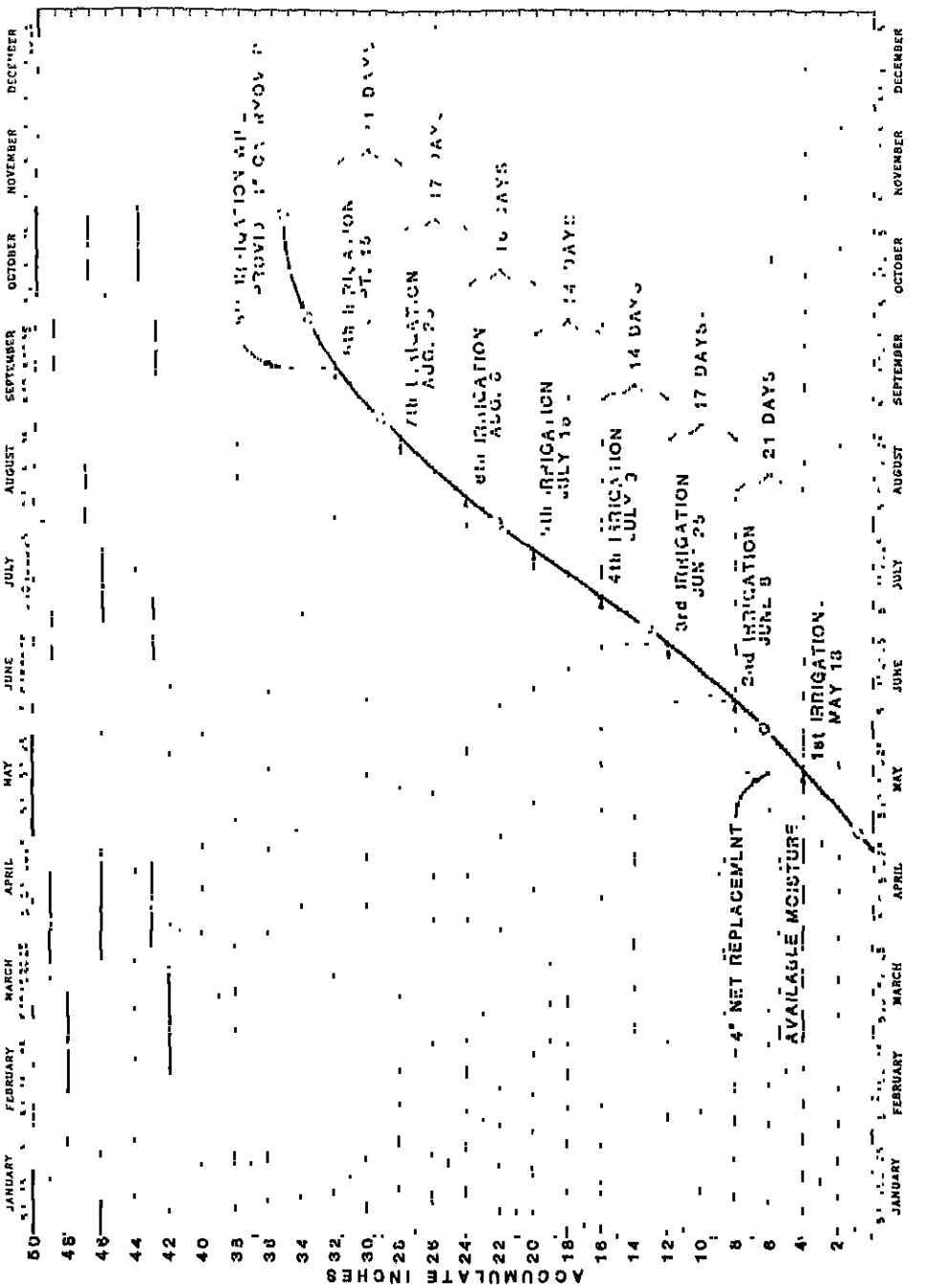
(2) The procedure involves field sampling and laboratory analysis to determine the soils water-holding capacity. Then, through measurement of local daily temperature, wind, humidity, rainfall, and solar radiation, crop water needs are determined. With this information, an irrigation schedule can be tailored to a specific site. By combining schedules for several farms, a delivery schedule can be developed for a distribution system. This is done by a computer program, through use of the Modified Penman equation for calculation of evapotranspiration.

Figure WA687.40.2 - Monthly Grid Paper



WA687.40.3

Figure WA687.40.3 - Consumptive Use Mass Curve Irrigation Scheduling



SUBPART E - IRRIGATION EVALUATION PROCEDURES

WA687.50 General

(a) Onsite observations and evaluations of irrigation on individual fields are necessary because variations may exist from field to field with similar soils as well as from irrigation to irrigation. The variations may involve soil compaction, cultural practices, soil tilth, and cropping patterns. An evaluation should indicate the relationship between system application rate, amount, and time of application, and compared aginst the water intake rate and water deficit of the soil that exists during a specific irrigation.

(b) Each method of irrigation has a different method of evaluation. Those included in this guide are for:

(1) Sprinkler irrigation systems.

(i) Center pivot system

(ii) Periodic move and solid set systems

(iii) Traveling sprinkler system

(2) Border irrigation system

(3) Furrow irrigation system

(4) Contour ditch irrigation system

(5) Trickle (drip) irrigation system

(c) The basic procedures for conducting irrigation evaluations are included in this guide. More detailed information can be found in the National Engineering Handbook, Section 15 or in the American Society of Agricultural Engineers Testing Standards.

WA687.51 Sprinkler irrigation systems.

(a) Center pivot. It is good practice to occasionally test the performance of a center-pivot system to check on the uniformity of application and flow characteristics.

WA687.51(a)(1)

(1) Information required. Center-pivot systems are propelled by using some of the water or by such independent power sources as electricity, oil hydraulics, or compressed air. Where water is used, it must be included as part of the total applied water; this somewhat lowers computed values of water-use efficiency. When the water discharging from the pistons or turbines is distributed as an integral part of the irrigation pattern, its effectiveness should be included in the uniformity of application or the Distribution Uniformity (DU); otherwise, it should be ignored in the DU computations but should be included in computing the Application Efficiency of the low quarter (E_q). The following information is required for evaluating center-pivot irrigation systems:

(i) Rate of flow from the total system.

(ii) Rate of flow required to propel the system if water-driven.

(iii) Depth of water caught in a radial row of catch containers.

(iv) Travel speed of end-drive unit.

(v) Lateral length to end-drive unit and radius of the portion of the field irrigated by the center pivot.

(vi) Width of the wetted strip at end-drive unit.

(vii) Operating pressure and diameter of largest sprinkler or spray nozzles at the end of the lateral.

(viii) Approximate differences in evaluation between the pivot and the high and/or low points in the field and along the lateral at the test position radius (taken to within plus or minus 5 feet).

(ix) Additional data indicated on Figure WA687.51.1.

Accurate measurement of the flow rate into the system is needed for determining the E_q of the system; if no accurate flow metering device is at the inlet, the E_q can only be estimated. One means of estimating is to measure the pressure at the first nozzle and compare to the manufacturers design on relatively new systems. Since flow and pressure are proportional: Qest = Q design x Pressure Measured/Pressure design.

Figure WA687.51.1 - Center Pivot Sprinkle Irrigation Evaluation

1. Owner_____ County_____

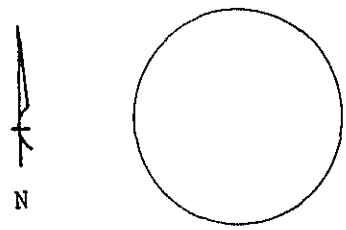
   Location_____, Observer_____, Date & Time_____

2. Equipment: Make_____, Length____ft, pipe diameter_____

3. Drive: Type_____

4. Irrigated area = _____ acres

5. Wind direction



*Mark position of lateral direction of travel, elevation differences, wet or dry spots and wind direction.
Wind____mph, Temperature ____°F
Pressure: at pivot_____psi
at end tower_____in.
Diameter of largest nozzle ___in.
Comments:_____

6. Crop: Condition _____, root depth _____ft.

7. Soil: texture_____, tilth_____, Other_____

8. Soil moisture deficiency_____in.

9. Surface runoff conditions at 3/4 point____, and at end_____

10. Speed of outer drive unit____ft per _____ min = _____ft/min

11. Time per revolution = $\frac{\text{(outer drive unit radius ____ ft.)}}{\text{9.55 (speed ____ ft/min)}}$ = _____hr

12. Outer end: water pattern width _____ ft, watering time_____min

13. Discharge from end drive motor _____ gal per _____min = _____gpm

14. System flow (meter)_____ gap per _____ min = _____gpm

15. Average weighted catches:
    System = $\frac{\text{(sum all weighted catches ____)}}{\text{(sum all used position numbers ____)}}$ = _____ml = _____in
    Low 1/4 = $\frac{\text{(sum low 1/4 weighted catches ____)}}{\text{(sum low 1/4 position numbers ____)}}$ = _____ml = _____in

16. Minimum daily (average daily weighted low 1/4) catch:
    $\frac{\text{(____ hrs operation/day x (low 1/4 catch ____ in)}}{\text{(____hrs/revolution)}}$ = _____in/day

17. Distribution Uniformity (DU) = $\frac{\text{Low 1/4 weighted catch}}{\text{System weighted catch}}$ = ____ = ____%

WA687.51.1.

Figure WA687.51.1 - Center Pivot Sprinkle Irrigation Evaluation (cont.)

18. Container catch data in units of , volume/depth ml/in
Span length_____ft, container spacing_____ft
Evaporation: initial_____ml - final_____ml = loss_____in

Span No.	Container Position Number	x Catch	Weighted Catch	Span No.	Container Position Number	x Catch	Weighted Catch
	1				37		
	2				38		
	3				39		
	4				40		
	5				41		
	6				42		
	7				43		
	8				44		
	9				45		
	10				46		
	11				47		
	12				48		
	13				49		
	14				50		
	15				51		
	16				52		
	17				53		
	18				54		
	19				55		
	20				56		
	21				57		
	22				58		
	23				59		
	24				60		
	25				61		
	26				62		
	27				63		
	28				64		
	29				65		
	30				66		
	31				67		
	32				68		
	33				69		
	34				70		
	35				71		
	36				72		

Sum all: used position numbers_____, weighted catches_____
Sum low 1/4: position numbers_____, weighted catches_____
Direct average catch_____ ml _____in

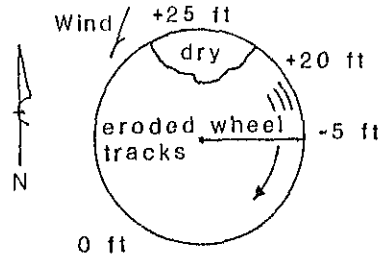
Figure WA687.51.2 - Center Pivot Sprinkler Irrigation Evaluation

1. Location Fu 873-Blk 3, Observer JK, Date & Time 8/18/85 p.m.

2. Equipment: make HG 100, length 1375 ft, pipe diameter 6-5/8 in

3. Drive: type electric

4. Irrigated area = $\frac{3.14 \text{ (wetted radius } 1450 \text{ ft)}^2}{43{,}560}$ = 152 acres



*Mark position of lateral direction of travel, elevation differences, wet or dry spots and wind direction.

Wind 6 mph, Temperature 90 °F
Pressure: at pivot 86 psi
at end tower 60 psi
Diameter of largest nozzle 1/2 in
Comments: Sprinklers operating OK, but end part circle sprinklers out of adjustment.

6. Crop: condition corn, good except north edge, root depth 4 ft

7. Soil: texture sandy loam, tilth poor other _____

8. Soil Moisture Deficiency _____ in

9. Surface runoff conditions at 3/4 point slight, and at end moderate

10. Speed of outer drive unit 45 ft per 10 min = 4.5 ft/min

11. Time per revolution = $\frac{\text{(outer drive unit radius } 1350 \text{ ft)}}{9.55 \text{ (speed } 4.5 \text{ ft/min)}}$ = 31.4 hr

12. Outer end: water pattern width 165 ft, watering time 39 min

13. Discharge from end drive motor _____ gal per _____ min = _____ gpm

14. System flow(meter) 115,000 gallons per 10 min = 1150 gpm

15. Average weighted catches:
System = $\frac{\text{(sum all weighted catches } 256{,}255\text{)}}{\text{(sum all used position number } 2044\text{)}}$ = 125 ml = 0.50 in

Low 1/4 = $\frac{\text{(sum low 1/4 weighted catches } 54{,}908\text{)}}{\text{(sum low 1/4 position numbers } 511\text{)}}$ = 107 ml = 0.43 in

16. Minimum daily (average daily weighted low 1/4) catch:

$$\frac{(24 \text{ hrs operation/day}) \times (\text{low 1/4 catch } 0.43 \text{ in})}{(31.4 \text{ hrs/revolution})}$$

17. Distribution Uniformity (DU) = $\frac{43}{.50}$ = 86% (good, sho

(WA210-VI-WAIG, OCTOBER 1985)

WA687.51.2.

Figure WA687.51.2 - Center Pivot Sprinkle Irrigation Evaluation (cont.)

18. Container catch data in units of ml , volume/depth 250 ml/in
Span length 90 ft, container spacing 22.5 ft
Evaporation: initial 150 ml - final 146 ml = loss .02 in

Span No.	Container Position Number	x Catch	Weighted Catch	Span No.	Container Position Number	x Catch	Weighted Catch
1	1	Start numbering at		10	37	118	4366
1	2	pivot end of inner		10	38	127	4826
1	3	span. Do not wait		10	39	115	4485
1	4	for completion of		10	40	147	5880
2	5	irrigation at first		11	41	127	5207
2	6	few containers.		11	42	122	5124
2	7			11	43	118	5074
2	8			11	44	144	6336
3	9	141	1269	12	*45	112	5040
3	10	160	1600	12	46	124	5704
3	11	122	1342	12	47	126	5922
3	12	130	1560	12	48	151	7248
4	13	143	1859	13	49	120	5880
4	14	150	2100	13	50	122	6100
4	15	154	2010	13	51	115	5865
4	16	123	1968	13	52	143	7436
5	17	144	2448	14	53	124	6572
5	18	138	2484	14	*54	114	6156
5	19	135	2565	14	55	115	6325
5	*20	107	4140	14	56	160	8960
6	21	122	2562	15	57	120	6840
6	22	114	2508	15	*58	110	6380
6	23	115	2645	15	*59	109	6431
6	24	138	3312	15	60	117	7020
7	*25	109	2725	16	*61	85	5185
7	*26	113	2938	16	62	194	12028
7	27	114	3078	16	63	148	9324
7	28	126	3528	End	*64	82	5248
8	29	116	3364		65	12	Omit
8	*30	107	3210		66		
8	31	122	3782		67		
8	32	140	4480		68		
9	33	117	3861		69		
9	*34	105	3570		70		
9	*35	111	3885		71		
9	36	125	4500		72		

Sum all: used position numbers 2044 , weighted catches 256,255
Sum low 1/4: position numbers 511 , weighted catches 54,908
Direct average catch 123 ml 0.5 in

(2) Equipment needed. (May also be used for the full evaluation of sprinkler-lateral systems.)

(i) A pressure gage (0-100 psi) with pitot attachment.

(ii) A stopwatch or watch with an easily visible second hand.

(iii) From 60 to 100 (depending on the lateral length) catch containers such as 1-quart oil cans, plastic freezer cartons, or plastic cups.

(iv) A 250-ml graduated cylinder to measure volume of water caught in the containers.

(v) A tape for measuring distances in laying out the container row and estimating the machine's speed.

(vi) A soil probe or auger.

(vii) A hand level and level rod to check differences in elevation.

(viii) A shovel for smoothing areas to set catch containers and for checking profiles of soil, root, and water penetration.

(vix) Figure WA687.51.1 for recording data.

(x) Manufacturer's nozzle specifications giving size, location, discharge, pressure and the instructions for setting machine's speed.

(xi) For water-driven machines which do not incorporate the drive water into the sprinkler patterns, a 2- to 5-gallon bucket and possibly a short section of flexible hose to facilitate measuring the drive-water discharge.

(xii) Pipe flow meter and 16' extension ladder.

(xiii) Voltage meter to measure stray currents at towers.

(3) Field procedure. Fill in the data blanks of Figure WA687.51.1 while conducting the field procedure. In a field having a low-growing crop or no crop, test the system when the lateral is in a position where differences in elevation are least. In tall-growing crops, such as corn, test the system where the lateral crosses the access road to the pivot point.

(i) Set out the catch containers along the radial path beginning at the pivot with a convenient spacing no wider than 30 feet; a 15- or 20-ft spacing is preferable. The radial path does not need to be a straight line. A most convenient spacing can be obtained by dividing the span length by a whole number such as 3, 4, 5, 6, etc. For example, if the span length is 90 feet, use a 30-foot or 22.5-foot spacing. This simplifies the catchment layout since measurements can be made from each wheel track and the spacing

related to the span, i.e., 4th span + 50 feet. Obviously, containers should not be placed in wheel tracks or where they would pick up waste exhaust water from water-driven systems (where the exhaust is not distributed). Where exhaust water is incorporated into the wetting pattern, lay out containers so they will catch representative samples of the drive water. As an example, a typical layout between wheel tracks for 90-foot spans and any type of drive can be accomplished by:

(a) Placing the first container position 5 feet downstream from the pivot.

(b) Setting container positions 2, 3, and 4 at 22.5-foot intervals. The fourth container position is now 17.5 feet from the wheel track of the first span.

(c) Repeat the above procedure to the end of the actual wetted circle placing a catch container at each container position along the way.

However, to save time it is most convenient to leave out the first few containers adjacent to the pivot since the watering cycle is so long in this area. Typically, the containers under the first one or two spans are omitted with little adverse effect on the evaluation. A number should be assigned to each container position with a sequential number system beginning with 1 at the container position at the pivot point. Even the locations not having containers under the first spans should be numbered.

(ii) Fill in the blanks (Figure WA687.51.2) dealing with climatic conditions, machine and test specifications, topography, general system, soil moisture, and crop performance. Determine the irrigated area, in acres by first estimating the wetted radius of the irrigated circle.

(iii) Determine the length of time required for the system to make a revolution by dividing the circumference of the outer wheel track by the speed of the end-drive unit.

(a) Stake out a known length along the outer wheel track and determine the time required for a point on the drive to travel between the stakes. The speed of travel will be the distance divided by the number of minutes. An alternative method is to determine the distance traveled in a given time.

(b) Since most machines have uniform span lengths except for perhaps the first span, the radius between the pivot and the outer wheel track can normally be determined by multiplying the span length by the number of spans.

(iv) Estimate the width of the wetted pattern (perpendicular to the lateral) and the duration of time water is received by the containers near the end-drive unit. The watering time is approximately equal to the pattern width divided by the speed of the end-drive unit. Check against sprinkler nozzle performance taken from manufacturer design.

(v) On water-driven systems, number each drive unit (span) beginning with the one next to the pivot. Time how long it takes to fill a container of known volume with the discharge from the water motor in the outer drive unit and record on Figure WA687.51.1. The exact method for doing this depends on the water motor construction, and it may require using a short length of hose.

(vi) If the system is equipped with a flow meter, measure and record the rate of flow into the system on Figure WA687.51.1. Most standard flow meters indicate only the total volume of water that has passed. To determine the flow rate, read the meter at the beginning and end of a 10-minute period and calculate the rate per minute. To convert from cubic feet per second (or acre-inches per hour to gpm, multiply by 450). The Cox Piro-Swivel Monometer gage, for example, can be used to measure pipe velocity at the first sprinkler head access fitting out from the pivot, providing velocity is less than 10 fps.

(vii) At the time the leading edge of the wetted patterns reaches the test area, set aside two containers with the anticipated catch to check the volume of evaporation losses. Measure and record the depth of water in all the containers as soon as possible and observe whether they are still upright; note abnormally low or high catches. The best accuracy can be achieved by using a graduated cylinder to obtain volumetric measurements. These can be converted to depths if the area of the container opening is known. For 1-quart oil cans, 200 ml corresponds to a depth of 1.0 in. Measure the catch of one of the evaporation check containers about midway during the catch reading period and the other one at the end.

(viii) The volumes caught in the containers must be weighted, since the catch points represent progressively larger areas as the distance from the pivot increases. To weight the catches according to their distance from the pivot, each catch value must be multiplied by a factor related to the distance from the pivot. This weighting operation is simplified by using the container layout procedure described earlier in Figure WA687.51.2.

(a) The average weighted system catch is found by dividing the sum of the weighted catches by the sum of the catch positions numbers where containers were placed. Space for this computation is provided in Figure WA687.51.2.

(b) For the average minimum weighted catch, an unknown number of containers that represents the low 1/4 of the irrigated area must be used. The low 1/4 is selected by picking progressively larger (unweighted) catches and keeping a running total of the associated position numbers until the subtotal approximates 1/4 of the sum of all the catch position numbers. The average weighted low 1/4 of the catches is then found by dividing the sum of the low 1/4 of the weighted catches by the sum of the associated catch position numbers.

WA687.51(a)(viii)[c]

[c] In order to determine whether the system is operating at acceptable efficiency, the losses to deep percolation and distribution uniformity should be evaluated by:

$$DU = \frac{\text{average weighted low quarter catch}}{\text{average weighted system catch}} \times 100$$

which for the example problem (Figure WA687.51.2, part 15) is:

$$DU = \frac{0.43}{0.50} \times 100 = 86 \text{ percent}$$

This is a reasonable value and is independent of the speed of revolution. DU should be greater than 85%.

(d) It is useful to plot the volume of catch against distance from the pivot (Figure WA687.51.3). Such a plot is useful for spotting problem areas and locating improperly-nozzled or malfunctioning sprinklers. Usually, there is excess water near each water-driven drive unit where the water is distributed as part of the pattern.

(e) If the system is operating on an undulating or sloping field and is not equipped with pressure or flow regulators, DU will vary with the lateral position. The DU will remain nearly constant if the differences in elevation (in feet) multiplied by 0.43 (to convert to an equivalent psi) do not exceed 20 percent of the pressure at the end sprinkler. Thus, for the example test the line position would have minimal effect on the DU since the pressure at the end sprinkler was 60 psi and the maximum elevation differences were only 25 feet, equivalent to 11 psi which is only 18 percent of 60 psi. The E_q can be determined if the pivot point is equipped with an accurate flow measuring device. For the average low quarter rate caught, use the average weighted low one-quarter of the catches expressed as a depth per revolution. The average depth of water applied per revolution is calculated by the formula: $Q = \frac{453\ Ad}{FH}$

Q = flow, gpm
A = design area, acres
d = gross depth of application, inches
F = time allowed for completion of one irrigation, days
H = actual operating time, hr/day

and from data computed on Figure WA687.51.2 on lines 11, 14, and 4, the depth applied per irrigation (revolution) is:

$$d = \frac{31.4 \times 1{,}150}{453 \times 152} = 0.53 \text{ inches} \qquad E_q = DU \times \frac{\text{average weighted system catch}}{d}$$

$$E_q = 86 \times \frac{0.50}{0.53} = 81 \text{ percent}$$

The small difference between DU of 86 percent and E_q of 81 percent indicates that evaporation losses are quite small and within the limits of accuracy of measurement. The system flow rate and E_q can be estimated without a flow meter at the inlet. This is done by first estimating the gross application by adding the average depth caught and the estimated evaporation, which for the data recorded in Figure WA687.51.2, on lines 15 and 17, is 0.50 + .02 = 0.52 in per revolution. The flow in gpm, which was distributed through the sprinkler, can be estimated by:

$$\text{Distributed flow} = \frac{453 \times 152 \times 0.52}{31.4} = 1{,}133 \text{ gpm}$$

If water from the drive motor was not distributed, it must be added to the distributed flow to obtain the total system flow. The E_q is then computed as before by using the computed system flow. For the recorded data the drive water was included in the distributed flow and need not be computed. However, if it had not been included in the distributed flow, it should be estimated by:

$$\text{Drive flow} = \frac{\text{sum of drive unit numbers X gpm}}{\text{flow from end water motor}}{\text{Number of drive units}}$$

(4) Runoff. The computation of E_q is meaningful only if there is little or no runoff. Runoff and/or ponding may occur near the moving end of the system (Figure WA687.51.3). Increasing the system's speed will reduce the depth per application and often prevent runoff. However, on some cracking clay type soils, decreasing the system's speed and allowing the surface to become drier between irrigations will improve the soil infiltration characteristics and reduce runoff, even though the depth per application is increased. Therefore, both increasing and decreasing the speed should be considered. Other methods for reducing runoff include:

(i) Using an implement called a pitter, which scrapes indentations in the furrows followed by small dikes every 2 or 3 feet.

(ii) Reducing the total depth of water applied per week by turning the system off for a period after each revolution. (Automatic stop devices are available for many systems.) This allows the surface soil to become drier between irrigations and thus have a higher infiltration capacity. Careful planning is required in order to avoid extensive under-irrigation which may reduce crop yields.

WA687.51(a)(4)(iii)

(iii) Decreasing sprinkler nozzle diameters to decrease the system capacity and application rate, all the nozzles must be changed to maintain uniformity. Use of a manufacturers nozzling program is recommended.

(iv) Increasing system pressure and reducing nozzle sizes throughout the system to maintain the same system flow rate. This decreases the average drop size and thereby drop impact which reduces the surface sealing that restricts infiltration.

(v) Using special nozzles with pins to break up the jets and reduce drop sizes.

(vi) Additional means of controlling runoff are discussed in Part WA687 D.

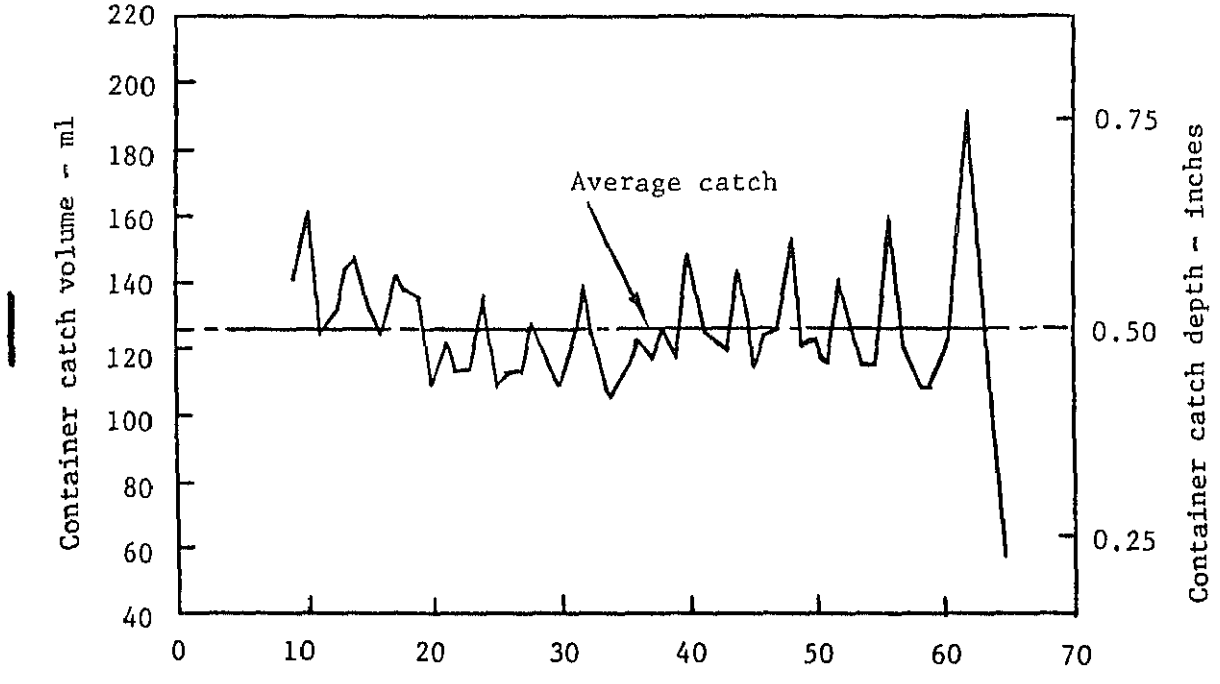


Figure WA687.51.3 - Profile of container catch from center pivot sprinkler evaluation test. Pivot is located at '0' position.

(b) Periodic-move and solid-set systems. Successful operation of sprinkler irrigation systems requires that the frequency and quantity of water application be accurately scheduled. Field application efficiency must be known to manage the quantity of application. Since system performance changes with time, periodic field checks are recommended. Data from the field evaluation of a periodic-move sprinkle system is presented in Figure WA687.51.5. The procedure for collecting the data follows:

(1) Information required. The desired information includes:

(i) Duration of normal irrigations.

(ii) Spacing of sprinklers along lateral lines.

(iii) Spacing of lateral lines along the main lines.

(iv) Measured depths of water caught in catch containers at a test location.

(v) Duration of the test.

(vi) Water pressures at the sprinkler nozzles at the test location and along laterals throughout the system.

(vii) Rate of flow from the tested sprinklers.

(viii) Additional data specified on Figure WA687.51.4.

It is useful to know what wetting patterns the operation produces at different pressures and also operating pressures at the pump and along the mainline and laterals. General study of data obtained in the field enables determination of system DU and E_q. Further study enables determination of the uniformity and economics of the spacing and/or alternate sets, the economics of sizes of pipes used for mains and laterals, the desirability of using other operating pressures and other durations of application, and the effect of wind.

(2) Equipment needed. The equipment the evaluator needs is:

(i) A pressure gage (0-100 psi) with pitot attachment.

(ii) A stopwatch or watch with an easily-visible second hand.

(iii) A large container of known volume clearly marked (1 gallon or larger for large sprinklers).

(iv) A 4-foot length of flexible hose having diameter appreciably larger than the outside diameter of nozzles.

WA687.51.4.

Figure WA687.51.4 - Sprinkler-Lateral Irrigation Evaluation

1. Location_____, Observer_____, Date_____
2. Crop_____, Root zone depth_____, MAD_____%, MAD_____in
3. Soil: texture_____, available moisture_____in/ft, SMD_____in
4. Sprinkler: make_____, model_____ nozzles_____by_____in
5. Sprinkler spacing_____by_____ft, irrigation duration_____hrs
6. Rated sprinkler discharge_____ gpm at_____psi giving_____in/hr
7. Lateral: diameter_____ in, slope_____%, Riser Height_____in
8. Actual sprinkler pressure and discharge rates:

	Sprinkler location number on test lateral						
							end
Initial pressure (psi)							
Final pressure (psi)							
Catch volume (gal)							
Catch time (min or sec)							
Discharge (gpm)							

9. Wind: Temp:

   Direction: initial____, during_____, final_____ _____oF
   Speed (mph): initial____, during_____, final____

10. Container grid test data in units of _____, volume/depth_____ml/in

    Container grid spacing _____ by _____ ft_____
    Test: start_____, stop_____, duration_____ hr _____ min = _____ hr

11. Evaporation container: initial _____ final _____ loss _____ in
12. Sprinkler pressures: max_____ psi; min _____psi; average_____psi
13. Comments:_____

(WA210-VI-WAIG-OCTOBER 1985)

Figure WA687.51.5 - Sprinkler-Lateral Irrigation Evaluation

1. Location Fu 120 Blk 89, Observer JLM, Date 9/30/85
2. Crop Tomatoes, Root zone depth 4.0 MAD 50%, MAD 4.4 in
3. Soil: texture clay loam, available moisture 2.2 in/ft, SMD 4.4 in
4. Sprinkler: make Rain Bird, model 29B nozzels 5/32 by _____ in
5. Sprinkler spacing 30 by 50 ft., Irrigation duration 23.5 hrs
6. Rated sprinkler discharge 4.4 gpm at 40 psi giving 0.28 in/hr
7. Lateral: diameter 2 in, slope 1-1/2%, Riser height 18 in
8. Actual sprinkler pressure and discharge rates:

Sprinkler location number on test lateral

	1	4	5	6	10	15	end
Initial pressure (psi)	45	40	40	40	39	40	
Final pressure (psi)	45		40		39	40	
Catch volume (gal)	1.0	1.0	1.0	1.0		1.0	
Catch time (min or sec)	12.6	12.2	13.2	13.2		13.2	
Discharge (gpm)	4.8	4.6	4.6	4.6		4.6	

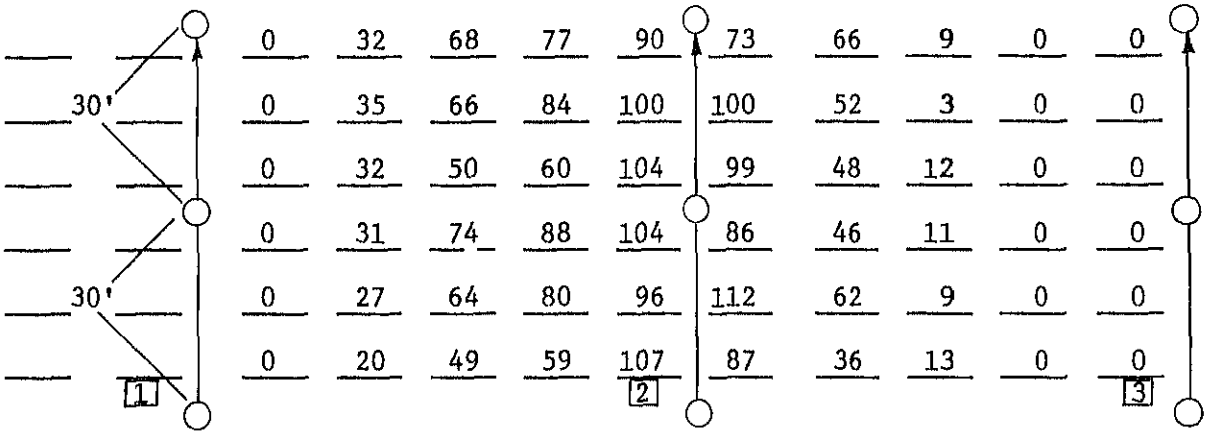
9. Wind:

Direction: initial ____, during ____, final ____

Speed (mph): initial 2+, during 5+ final 5+

Temp. 85 °F

10. Container grid test data in units of ml, volume/depth 200 ml/in
Container grid spacing 10 by 10 ft Both sides of set 2
Test: start 2:55 pm, stop 4:30 pm, duration 1 hr 35 min = 1.58 hr



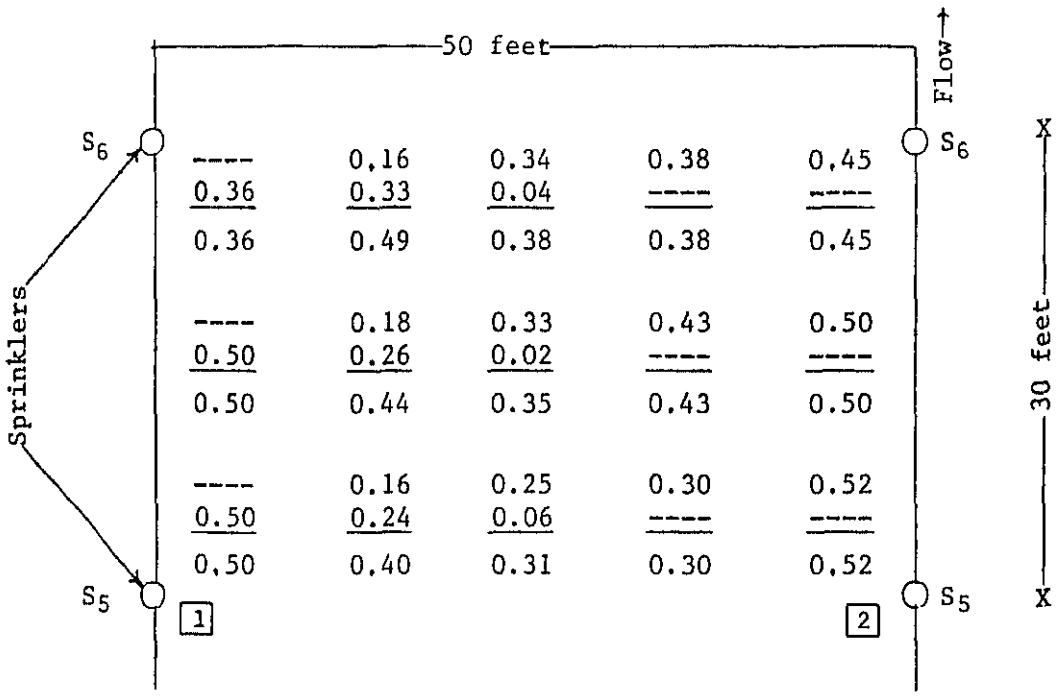
11. Evaporation container: initial 2.15 final 2.10 loss 0.05 in

12. Sprinkler pressures: max 45 psi; min 39 psi; average 40 psi

13. Comments: Test duration was too short. Depths caught measured in 1000 ml graduated cylinder. Wind velocities are less than normal.

WA687.51.6

Figure WA687.51.6 - Combined Catch Pattern (in) Between Sprinklers 5 and 6 for a 50-foot Lateral Spacing



(v) From 50 to 100 (or more, depending on sprinkler size) catch containers such as 1-quart oil cans or plastic freezer cartons.

(vi) A measuring stick (or ruler) to measure depth, or a 250-ml graduated cylinder to measure volume of water caught in containers.

(vii) A soil probe or auger.

(viii) A 50- or 100-foot tape for measuring distances in laying out catch containers grid.

(ix) A shovel for smoothing spots to set containers and for checking soil, root, and water penetration profiles.

(x) Figure WA687.51.4 for recording data.

(xi) Manufacturers' sprinkler performance charts showing the relationship between discharge, pressure, and wetted diameter plus recommended operating pressure ranges.

(xii) A set of drill bits ranging in size from 3/64 to 1/4-inch in diameter in increments of 1/64-inch makes a handy set of feeler gages to check nozzle wear on circular orifices. The new "CDS" and "Diffuser" nozzle are more difficult to check for wear. A visual check and discharge vs. pressure check is reasonable.

(3) Field procedure. The information obtained from the following field procedure should be entered in a data sheet similar to Figure WA687.51.4.

(i) Choose a location along a lateral for the test. It may be either a single location at which the pressure is typical (or average) for the entire system, or two locations near the ends of a lateral to permit study of effects of differences in pressure. Loss of pressure due to friction in a lateral that has only one size of pipe is such that about half of the pressure loss occurs in the first 20 percent of the length and over 80 percent of the pressure loss occurs in the first half of the lateral's length. (See Figure WA687.51.7.) On a flat field, the most representative pressure is about 40 percent of the distance from the inlet to the terminal end.

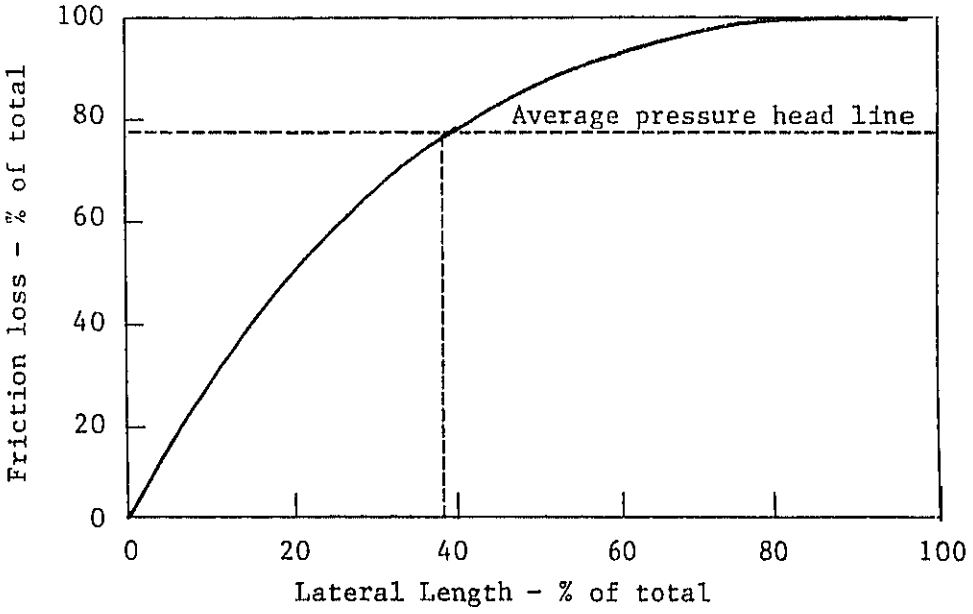


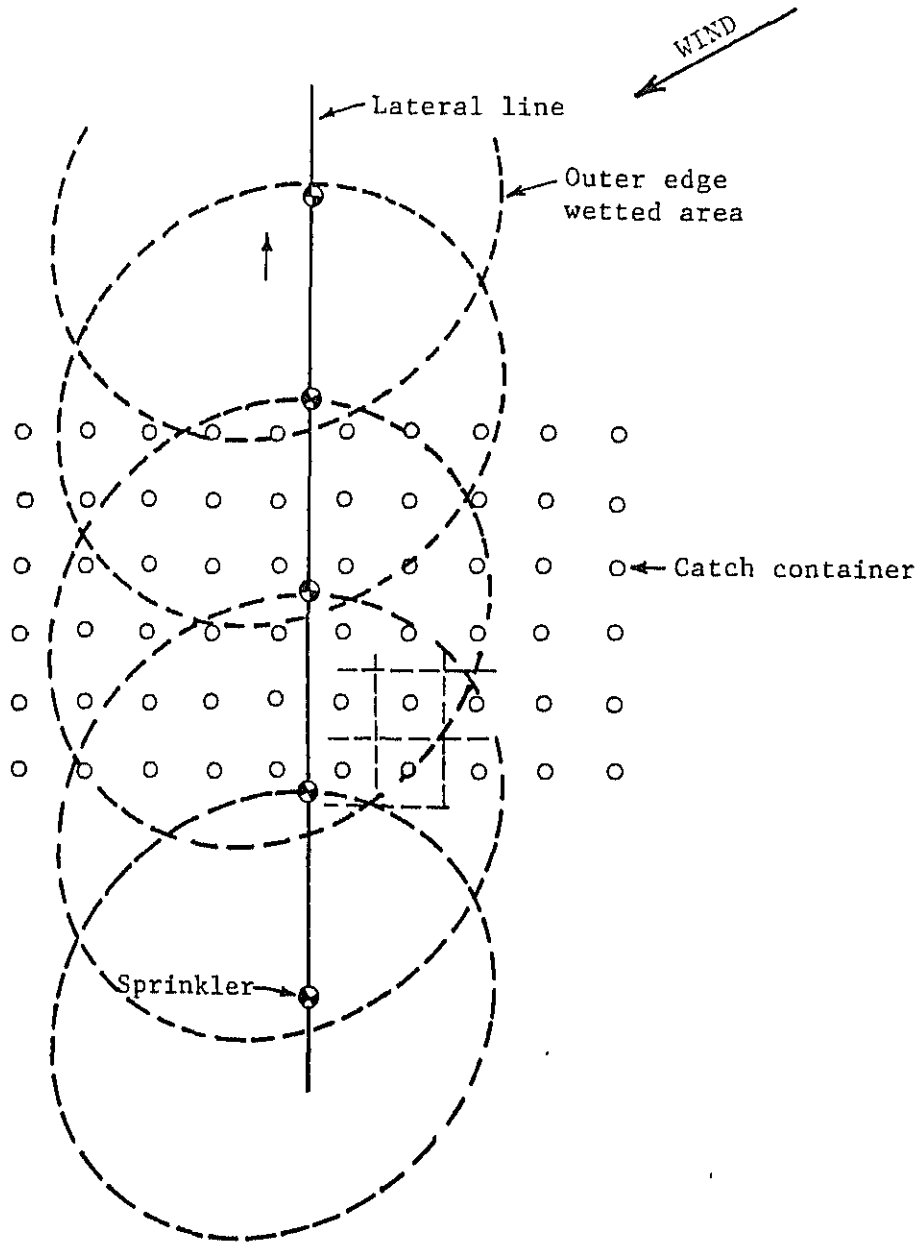
Figure WA687.51.7 - Loss of pressure due to friction along a lateral having only one size of pipe.

(ii) Set out at least 24 catch containers (see pattern in Figure WA687.51.8) on a grid having a spacing not to exceed 10- by 10-foot for testing along a single lateral line.

(a) The catch containers' pattern should be laid out to cover two adjacent areas between three sprinklers since sprinklers may not apply water at precisely uniform rates. Each catch container is assumed to give representative depth of catch over the square having the same dimensions as the can spacing in which it is centered. (See dotted grid lines in Figure WA687.51.8.)

WA687.51.8

Figure WA687.51.8 - Layout of Catch Containers for Testing the Uniformity of Distribution Along a Sprinkler Lateral Line (both sides of a set)



(b) For solid set or block-move systems where several adjacent laterals operate simultaneously, the catch containers should be placed in the area between two adjacent laterals. Caution should be exercised to allow for any water that could enter the test container area from adjacent blocks. These tests cannot be used to study other lateral spacings.

(c) Each container should be located within a foot of its correct grid position and set carefully in an upright position with its top parallel to the ground; any surrounding vegetation that would interfere with a container should be removed. When it is windy, it may be necessary to fasten containers to short stakes with rubber bands, and weight them with a known depth of water or a stone (which is later subtracted from the total depth shown after the catch); or they may be set in shallow holes. The most accurate means for measuring the catch can be achieved volumetrically by using a graduated cylinder. These measurements can be converted to depths if the area of the container opening is known. For 1-quart oil cans, 200 ml corresponds to 1.00 in depth. Other suitable catch containers may be square or cylindrical plastic freezer containers with sides tapered slightly for nesting or any similar container.

(d) Determine and record the container grid spacing and the ratio of volume to depth of catch. Also indicate the position of the lateral and record the location and position numbers of the sprinklers on the lateral.

(iii) Determine the soil texture profile and management allowed deficit, MAD, then estimate the available soil moisture capacity in the root zone (see Measuring Soil Water Content section of Irrigation Guide) and check the soil moisture deficit, SMD, in the catch area on the side of the lateral that was not irrigated during the previous set. These values should be recorded as shown on lines 2 and 3 of Figure WA687.51.4.

(iv) Check and record the make and model of the sprinkler and the diameter of the nozzles.

(v) Obtain the normal sprinkler spacing duration and frequency of irrigation from the operator and record them. The standard way of expressing the sprinkler grid spacing is _____ - by_____- foot; this indicates the sprinkler spacing for the lateral and the spacing between laterals in that order.

(vi) Read and record the rated sprinkler discharge, pressure, the computed average design application rate from the system design data and manufacturer's sprinkler catalogs.

WA687.51(b)(3)(vii)

(vii) Check and record the size and slope of the lateral pipe and the height and erectness of the risers.

(viii) Before starting the test, stop the rotation of the sprinklers at the test site to prevent water from entering the containers. A short piece of wire or stick wedged behind the swinging arm facilitates this. A golf tee works as a plug for most nozzles.

(a) Turn on the water to fill the lateral lines. When the test lateral is full, turn the pressure up slowly to observe the trajectory, breakup of drops, and effect of wind at different pressures. Then set the pressure at the value desired for the test.

(b) Measure and record the pressure at the sprinklers to be tested at several places along the line and at both ends to observe the differences in pressure. Pressures should be checked at both the beginning and end of the test period and recorded on line 8. When measuring sprinkler pressures, the pivot tube must be centered in the jet, which must impinge directly onto its tip. The tip may be rocked slightly. Record the highest pressure reading shown while the pivot tube is being held about 1/8-inch from the sprinkler nozzle.

(c) Also on line 8, record how long it takes each sprinkler in this test area to fill the large container of known volume. Do this by slipping the short length of hose over the sprinkler nozzle and collecting the flow in the container. To improve accuracy, measure the nozzle output several times and compute the average. (If the sprinkler has two nozzles, each can be measured separately with one hose.) Often the measured sprinkler discharge rate is greater than what the manufacturer specified at the given pressure. This generally occurs because sprinkler nozzles often wear during use and become enlarged. You can check nozzle erosion with a feeler gage such as a drill bit that has the diameter specified for the nozzle.

(ix) Note the wind speed and direction and record the wind direction in part 9 by drawing an arrow relative to the direction of water flow in the lateral record temperatures.

(x) Empty all catch containers before starting the test; start the test by releasing all sprinklers surrounding the test site so they are free to rotate and note the starting time on line 10.

(xi) Set outside the catchment area a container holding the anticipated amount of catch to approximately check the volume of water lost by evaporation (see Figure WA687.51.4, line 11).

(xii) While the test is in progress, check sprinkler pressures at 20 to 40 systematically selected locations throughout the system (for example at the two ends and quarter points along each lateral) and record the maximum, minimum, and average pressures encountered in part 12.

(xiii) Terminate the test by either stopping the sprinklers surrounding the test site in a position such that the jets do not fall into the containers, or by deflecting the jets to the ground. Note the time, check and record the pressure, and turn off the water. It is most desirable for the duration of the test to be equal to the duration of an irrigation to get the full effect of wind and evaporation. Ideally, minimum duration tests should apply an average of about 0.5 inch of water in the containers.

(a) Measure the depth of water in all the containers and observe whether they are still upright; note any abnormally low or high catches. As shown in part 10, caught depths or volumes are recorded above the line at the proper grid point, which is located relative to the sprinkler and direction of flow in the pipe line. For long runs, where maximum depths exceed 2.0 inches, a measuring stick provides suitable accuracy up to +0.1 inch.

(4) Utilization of field data. The utilization of the data was discussed in connection with the test data presented in Figure WA687.51.6. The general procedure for utilizing the data is:

(i) Convert the volumes of water caught in the containers to depths and record them similar to Figure WA687.51.6. Assuming that the test is representative and that the next set would give identical results, the right-hand side of the catch pattern may, as if it were a subsequent set, be overlapped (or superimposed) on the left-hand side to simulate different lateral spacings. For lateral spacings that are whole units of the container spacings, the summation of the catches of the two sets represents a complete irrigation (Figure WA687.51.6 illustrates overlapping). For very close lateral spacings, water may overlap from as many as four lateral positions. the above concept of overlapping is not suggested where winds are likely to change appreciably between subsequent lateral sets. It is most valid for 24-hour sets.

(ii) In order to determine whether sprinklers are operating at acceptable efficiency, the system DU and CU should be evaluated. The system DU is based on the average depth recorded for the lowest one-fourth of the catch locations; hence, about 1/8 of the area may actually have received slightly less water. If an individual low value was due to a poor field measurement, perhaps no area actually received less. If the average low quarter depth infiltrated just matches the SMD the percent of the infiltrated water going too deep would be approximately equal to 100 - system DU. (A similar relationship exists for CU.)

(iii) The potential system application efficiency, E_q and E_h, should be determined in order to evaluate how effectively the system can utilize the water supply and what the total losses may be. The total amount of water required to irrigate the field fully can be estimated.

WA687.51(b)(4)(iii)

The E_q and E_h values are always a little lower than the DU and CU of a sprinkle irrigation system because the average water applied is greater than the average water caught. The difference between the average water applied and the water caught or received is an approximation of losses due to evaporation and drift plus loss of water due to some of the area's being ungaged and some evaporation from the gage cans. The system E_q and E_h indicate how well the tested sprinklers are able to operate if they are run the correct length of time to satisfy the SMD or MAD. It is, therefore, a measure of the best management can do and should be thought of as the potential of the system within the limit that the test represents the whole field. The effective portion of applied water, R_e, can be determined from the field data by:

$$R_e = \frac{\text{average catch rate (or depth)}}{\text{application rate (or depth)}} = \frac{\text{average catch rate}}{96.3\ q/(S_l \times S_m)}.$$

where

q = average sprinkler discharge rate, gpm

S_l = sprinkler spacing on the lateral, ft

S_m = lateral spacing along the main, ft

(c) Traveling sprinkler. The following procedures are designed mainly to check the uniformity and efficiency of irrigation across the travel paths. However, the nature of the operation and the large size of the sprinklers tend to reduce the quality of irrigation around field boundaries. It is particularly difficult to obtain high-quality irrigation at the ends of the towpaths unless special control systems are used on the sprinkler, and on small fields this is an appreciable area--as much as 200 feet on each end. If the traveling unit is powered by a water piston, the expelled water should not be included in evaluating the DU but should be included in computing the E_q and E_h.

DU - "Distribution Uniformity" indicates the uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field and is expressed as a percent relating the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

E_q - "Application Efficiency of Low Quarter" indicates the actual efficiency being achieved with a given system and is expressed as a percent relating the average low quarter depth of water stored in the root zone to the average depth of water applied.

E_h - "Potential Application Efficiency of Low Quarter" is the measure of how well a system can perform under reasonably good management when the desired irrigation is being applied and is expressed as a percent relating the average low quarter depth infiltrated when equal to MAD the average depth of water applied.

(1) Information required. The following information is required for evaluating traveling sprinkler irrigation systems:

(i) Frequency of normal irrigations.

(ii) MAD and SMD.

(iii) Nozzle diameter and type for estimating systems' flow rate.

(iv) Pressure at the nozzle.

(v) Depth of water caught in catch containers.

(vi) Travel speed when the unit is at the test location and extreme ends of the towpaths.

(vii) Spacing between towpaths.

(viii) Rate of discharge from water piston (if applicable).

(ix) Additional data indicated on Figure WA687.51.9.

An accurate estimate for the flow rate from the nozzle is necessary for calculating the E_h and E_q of the system. A good way to estimate this flow is to use the sprinkler performance chart provided by the manufacturer. A typical performance chart gives the rate of sprinkler discharge and diameter of coverage for various nozzle sizes at different pressures.

(2) Equipment needed. The equipment the evaluator needs is:

(i) A pressure gage (0-150 psi) with pivot tube attachment.

(ii) A stopwatch or watch with an easily-visible second hand.

(iii) Approximately 60 catch containers such as 1-quart oil cans, plastic freezer cartons or plastic cups.

(iv) A 250-ml graduated cylinder to measure volume of water caught in the containers.

WA687.51.9.

Figure WA687.51.9 - Traveling Sprinkler Irrigation Evaluation

1. Location_____, Observer_____Date_____

2. Crop_____, Root zone depth -____ft, MAD_____%, MAD_____

3. Soil: texture_____, available moisture_____in/ft

4. SMD: near tow path_____in, at 1/4-point_____in, at mid-point_____in

5. Sprinkler/Traveler makes and models_____ / _____

6. Nozzle: size_____in, type_____, pressure____psi, discharge_____gpm

7. Hose: length____ft, diameter____in, type_____

   inlet pressure_____psi, outlet pressure_____psi

8. Drive: type_____, discharge (if piston)__--__gal/__--__min = _-_min

9. Towpath: spacing____ft, length_____ft, slope ± _____0_____%

10. Evaporation loss: initial - final volume =_____ml -_____ml =_____in

11. Traveler speed check at:
    beginning _____ft/_____ min = _____ft/min
    at test site _____ft/_____ min = _____ft/min
    terminal end _____ft/_____ min = _____ft/min

12. Total: discharge_____gpm, pressure loss_____psi

13. Average application rate:

$$\frac{\text{'ge}\quad\text{gpm) x 360}}{\text{c)}^2\ \text{x (wet sector}\quad^{\circ}\text{)}} = \quad\text{in}$$

$$\frac{96.3\text{x(sprinkler plus piston discharge}\quad\text{gpm)}}{60\quad\text{(path spacing}\quad\text{ft) x (travel}\quad\text{ft/min)}} = \quad\text{in}$$

15. Average overlapped catches:
    System = $\frac{\text{(sum all catch totals}\quad\text{in)}}{\text{(number of totals}\quad\text{)}}$ = _____in
    Low 1/4 = $\frac{\text{(sum of low 1/4 catch totals}\quad\text{in)}}{\text{(number of low 1/4 totals}\quad\text{)}}$ = _____in

16. Comments: (wind drift, runoff, etc.): _____

_____

_____

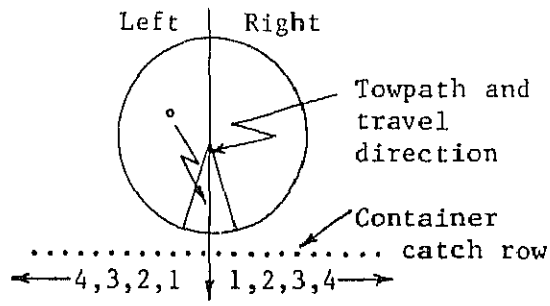
Figure WA687.51.9- Traveling Sprinkler Irrigation Evaluation (Cont.)

17. Container test data in units of _____, Volume/depth _____ml/ir

Wind: speed _____mph

Temp: _____°F

Note part circle operation and the dry wedge size in degrees.



Path Spacing (feet)	Container Catch Volume				Right plus Left Side Catch Totals	
	Left side of path		Right side of path			
	Catch No.	Catch	Catch No.	Catch	ml	Inches
330	1		33			
320	2		32			
310	3		31			
300	4		30			
290	5		29			
280	6		28			
270	7		27			
260	8		26			
250	9		25			
240	10		24			
230	11		23			
220	12		22			
210	13		21			
200	14		20			
190	15		19			
180	16		18			
170	17		17			
160	18		16			
150	19		15			
140	20		14			
130	21		13			
120	22		12			
110	23		11			
100	24		10			
90	25		9			
80	26		8			
70			7			
60			6			
50			5			
40			4			
30			3			
20			2			
10			1			
			Sum of all catch totals			
			Sum of low 1/4 catch totals			

Start with number 1 opposite the towpath spacing and number down.

Start with number 1 at bottom of column and number up.

WA687.51.10

(EXAMPLE)

Figure WA687.51.10 - Traveling Sprinkler Irrigation Evaluation

1. Location Field 200, Observer JK, Date 8/5/85
2. Crop Corn, Root zone depth 4.0 ft, MAD 35 %, MAD 2.1 inches
3. Soil: texture fine sandy loam, available moisture 1.5 in/ft
4. SMD: near tow path 2.1 in, at 1/4-point 2.2 in, at mid-point 3.7 in
5. Sprinkler/Traveler makes and models Nelson 201 / Heinzman 6645
6. Nozzle: size 1.5 in, type ring, pressure 100 psi, discharge 500 gpm
7. Hose: length 660 ft, diameter 4 in, type lay-flat
   inlet pressure 137 psi, outlet pressure 110 psi
8. Drive: type turbine, discharge (if piston) -- gal/-- min = - min
9. Towpath: spacing 330 ft, length 1320 ft, slope ± 0 %
10. Evaporation loss: initial - final volume = 500 ml - 470 ml = .15 in
11. Traveler speed check at:
    beginning 9.5 ft/ 10 min = 0.95 ft/min
    at test site 10.0 ft/ 10 min = 1.0 ft/min
    terminal end 10.2 ft/ 10 min = 1.02 ft/min
12. Total: discharge 500 gpm, pressure loss 37 psi
13. Average application rate:

$$\frac{96.3 \times (\text{sprinkler discharge } 500 \text{ gpm}) \times 360}{(\text{towpath spacing } 330 \text{ ft})^2 \times (\text{wet sector } 345\ ^\circ)} = 0.46 \text{ in/hr}$$

14. Average depth applied:

$$\frac{96.3}{60} \times \frac{(\text{sprinkler plus piston discharge } 500 \text{ gpm})}{(\text{path spacing } 330 \text{ ft}) \times (\text{travel } 1.0 \text{ ft/min})} = 2.43 \text{ in}$$

15. Average overlapped catches:

$$\text{System} = \frac{(\text{sum all catch totals } 74.87 \text{ in})}{(\text{number of totals } 33)} = 2.27 \text{ in}$$

$$\text{Low 1/4} = \frac{(\text{sum of low 1/4 catch totals } 12.91 \text{ in})}{(\text{number of low 1/4 totals } 8)} = 1.61 \text{ in}$$

16. Comments: (wind drift, runoff, etc.): no evidence of serious wind drift or runoff; crop was stunted midway between paths.

(WA210-VI-WAIG, OCTOBER 1985)

(EXAMPLE)

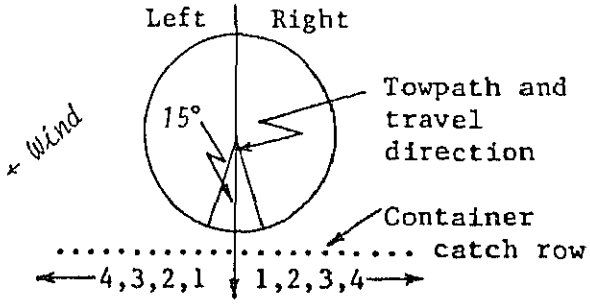
Figure WA687.51.10 - Traveling Sprinkler Irrigation Evaluation (cont.)

17. Container test data in units of *ml*, Volume/depth *200* ml/in

Wind: speed *5-10* mph

Temp: *70* °F

Note part circle operation and the dry wedge size in degrees.

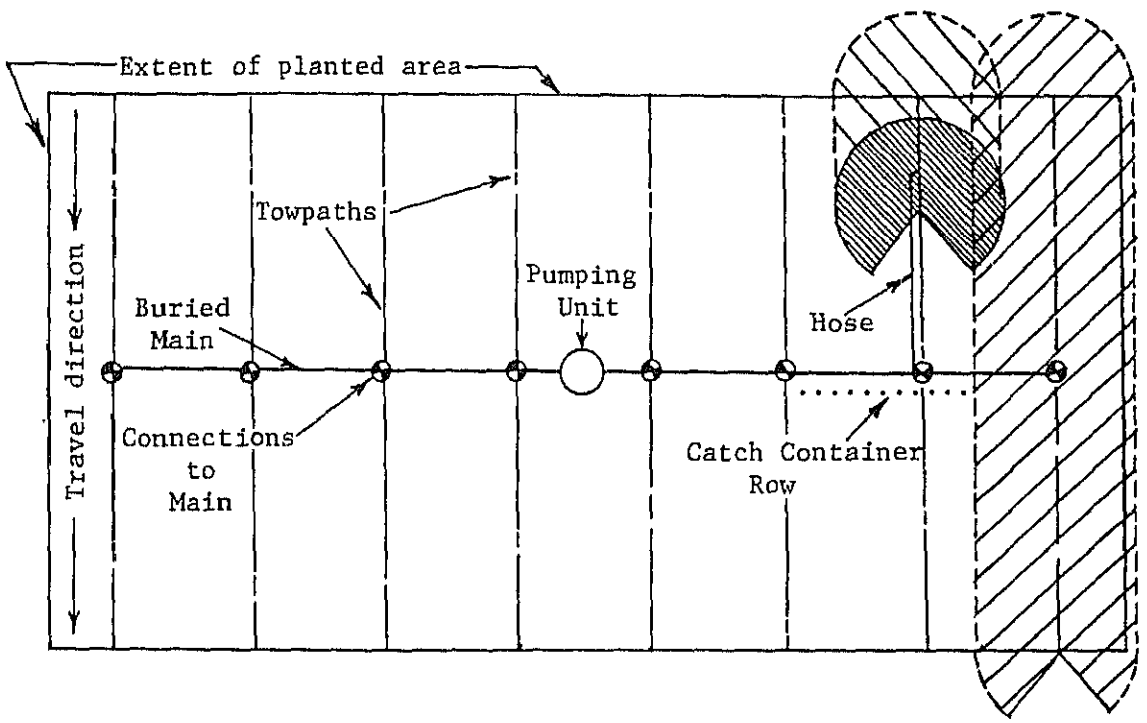


Path Spacing (feet)	Container Catch Volume				Right plus Left Side Catch Totals	
	Left side of path		Right side of path			
	Catch No.	Catch	Catch No.	Catch	ml	Inches
330	1	*560*	33		*560*	*2.80*
320	2	*540*	32		*540*	*2.70*
310	3	*510*	31		*510*	*2.55*
300	4	*490*	30		*490*	*2.45*
290	5	*505*	29		*505*	*2.53*
280	6	*475*	28		*475*	*2.38*
270	7	*480*	27		*480*	*2.40*
260	8	*460*	26		*460*	*2.30*
250	9	*430*	25		*430*	*2.15*
240	10	*410*	24		*410*	*2.05*
230	11	*370*	23		*370*	*1.85*
220	12	*325*	22		*325*	*1.63*
210	13	*305*	21		*305*	*1.53*
200	14	*345*	20		*345*	*1.73*
190	15	*335*	19		*335*	*1.68*
180	16	*310*	18		*310*	*1.55*
170	17	*305*	17		*305*	*1.53*
160	18	*290*	16	*35*	*325*	*1.62*
150	19	*250*	15	*75*	*325*	*1.62*
140	20	*230*	14	*120*	*350*	*1.75*
130	21	*215*	13	*215*	*430*	*21.5*
120	22	*165*	12	*365*	*530*	*2.65*
110	23	*95*	11	*410*	*505*	*2.52*
100	24	*65*	10	*515*	*580*	*2.90*
90	25	*25*	9	*540*	*565*	*2.82*
80	26	---	8	*525*	*525*	*2.62*
70			7	*500*	*500*	*2.50*
60			6	*490*	*490*	*2.45*
50			5	*470*	*470*	*2.35*
40			4	*490*	*490*	*2.45*
30			3	*540*	*540*	*2.70*
20			2	*605*	*605*	*3.02*
10			1	*625*	*625*	*3.12*
			Sum of all catch totals			*74.87*
			Sum of low 1/4 catch totals			*12.91*

Start with number 1 opposite the towpath spacing and number down.

Start with number 1 at bottom of column and number up.

Figure WA687.51.11 - Typical Layout for Traveling Sprinklers Showing Location of Catch Container Line for Evaluating the Distribution Uniformity



(v) A 50- or 100-foot tape for measuring distances in laying out the lines of containers and estimating machine's speed.

(vi) A soil probe or auger.

(vii) Manufacturer's sprinkler performance chart giving the relationship between discharge pressure, and wetted diameter plus recommended operating pressure range.

(viii) Speed specifications and setting instructions for the traveling vehicle.

(ix) A shovel for smoothing areas to set catch containers and for checking profiles of soil, root, and water penetration.

(x) A hand level to check differences in elevation.

(xi) Figure WA687.51.9 for recording data.

(xii) For travelers powered by a water piston, a 2- to 5-gallon bucket and possibly a short length of flexible hose to facilitate measuring the piston discharge.

(3) Field procedure. Fill in the data blanks of Figure WA687.51.9 during the field procedure process. Choose a test location about midway along the towpath where the traveler operates. The location should be far enough ahead of the sprinkler so no water reaches the test area before the catch containers are set up. It should be far enough from the outer end of the path so that the back (or trailing) edge of the sprinkler pattern passes completely over it before the sprinkler reaches the end of the towpath. A good location for the test area is along the main line where an access road is usually provided. In tall-growing crops such as corn, an access road is the only practical location for the test.

(i) Set out a row of catch containers 10 feet apart across the towpath (see Figure WA687.51.11); the containers that are adjacent to the towpath should be set on both sides of the towpath about 5 feet from the center of the patch. The outer containers should be at the edges of the wetted strip. It is good practice to provide at least two extra containers on both ends of the container row to allow for changes in wind direction or speed.

(ii) Fill in the data blanks about the crop and soil (parts 2 and 3 of Figure WA687.51.10).

(iii) Check the SMD at the following locations: 10 feet from the towpath; one-fourth of the distance to the next towpath; and midway between the towpath in use and the one to be used next. Enter these SMD data in part 4.

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(iv) Note the make and model of the traveler, the sprinkler, type of nozzle (orifice ring or taper bore), and nozzle diameter. (It is also good practice to measure the nozzle size after the system is turned off. This is done to check for nozzle erosion so the estimated flow rate can be adjusted if necessary.) Enter this information in parts 5 and 6.

(v) Check the hose length and diameter also the inlet and outlet pressures of the hose, if feasible. Record in part 7.

(vi) Check and record in part 8 the type of drive used in the traveler. In evaluating water-piston powered travelers to estimate the drive flow, determine how long it takes the discharge from the piston to fill the bucket (or jug) of known volume.

(vii) Measure and record the spacing between towpaths and the towpath length and general slope in part 9.

(viii) Set out two containers with the anticipated catch to check the volume of evaporation losses. The first container should be set out when the wetted pattern first reaches the catch row and the second container when the sprinkler vehicle reaches the row. Record these catches in part 10 which is set up to record these data.

(ix) Determine the travel speed of the unit (ft/min) as it passes over the row of containers. This speed should also be checked at the extreme ends (beginning and terminal on Figure WA687.51.10) of the towpath and recorded in part 11. To do this, stake out a known length, say 10 feet, and determine the time required for a point on the vehicle to travel between the stakes. An alternate method is to determine the distance traveled in a given time, say 10 minutes.

(x) Check and record in part 6 the pressure at the sprinkler nozzle when it is about directly over the catch row and estimate the sprinkler discharge from the manufacturer's performance chart.

(xi) Estimate and record in part 12 the total discharge from the traveler by adding the sprinkler nozzle and piston discharges. Also estimate and record the total pressure loss through the hose and sprinkler.

(xii) Note in part 17 the general test conditions including: wind speed and direction, angle degrees of the dry wedge of part-circle sprinkler operation, wet or dry spots, and runoff problems.

(xiii) Measure and record in part 17 the depth of water in all the containers as soon as possible and observe whether they are still upright; note any abnormally low or high catches. Then measure and record in part 10 the catch in the two evaporation check containers after the last container in the row has been recorded.

(xiv) Note any special comments such as runoff, test problems, and crop water stresses in part 16.

(xv) Do the computation work required on lines 17 and 13 through 15 of Figure WA687.41.10.

Part 17 of Figure WA687.51.10 is designed to simplify the procedure of overlapping the catches to simulate a complete irrigation between adjacent towpaths. To use the form, number the containers from the towpath outward beginning with 1, 2, 3, etc., to the right and to the left looking opposite to the direction of travel. Enter the container numbers and catch volumes as follows: for the left side data start numbering with container 1 opposite the actual towpath spacing (which for the example field evaluation is 330 feet) and number downward; and for the right side data start the numbering with container 1 opposite the towpath spacing of 10 feet and number upward.

(4) Utilization of field data. Data used in computations in the following pages were recorded in evaluation of a traveling sprinkler system in a corn field (Figure WA687.51.10). Assuming the test is representative and that the next run would give identical results, the left-hand side of the container catch volumes may be overlapped on (added to) the right-hand side. (See Figure WA687.51.11.) Figure WA687.51.10 is designed to simplify this operation. The overlapped data totals provide an estimate of the profile of the depth of irrigation water between adjacent towpaths. For computations of DU, E_h, and E_q that follow, it is assumed that this depth profile represents the distribution throughout the field. In other words, the assumption is that the depth profile across the strip between towpaths is the same along the entire strip. This is obviously subject to question because of discontinuities at the path ends, changes in travel speeds, variations in pressure due to elevation, and changes in wind speed and direction.

(5) Distribution uniformity.

(i) In order to determine whether the system is operating at an acceptable and economical efficiency, the DU should be evaluated. For the sample test using the average and low one-quarter catch data from line 15 of Figure WA687.51.10 is:

$$DU = \frac{1.61}{2.27} \times 100 = 71 \text{ percent}$$

This is a fair value for a traveler system with widely-spaced towpaths and is generally independent of the speed of travel.

(ii) It is useful to plot the depth of a catch along the distance between towpaths (see Figure WA687.51.12) as a means for spotting problem areas. Note that the plotted points represent the depth of catch at the midpoint of each 10-foot interval between adjacent towpaths. Figure WA687.51.12 shows that either the towpaths are too far apart, which results

in a shallow wetted depth midway between towpaths, or that the angle of the part circle is set too narrow. The effect of narrowing the spacing between towpaths can be measured by using a blank copy of Figure WA687.51.9, line 17, and repeating the above procedure with the same catch data and the new spacing. Widening this angle of the dry wedge would reduce the depth of water applied near the paths and would increase the depth of water applied midway between towpaths; but to measure the effect of widening the angle requires another catch test run.

(iii) The check of travel speed shows that the unit moves faster toward the terminal end of the towpath run. (See sample Figure WA687.51.10, line 11.) This change in speed is caused by the interaction of the buildup of cable on the winch reel and the increased drag exerted by the hose as the unit moves from the beginning to the terminal end of the towpath. Fortunately, these two factors somewhat offset each other, and in the operation reported here the unit was traveling only 2 percent faster at the terminal end than in the test area and 5 percent slower at the beginning end. (See Figure WA687.51.11.) These changes of speed would lower the DU over the entire strip by about three-eights of the total percent speed change, i.e., 3/8 x (2 + 5) or less than 2 percent.

(iv) Since the nozzle pressure is normally near 100 psi, differences in elevation are usually not great enough to affect DU appreciably. Only differences in elevation along the towpaths are of concern because valves can adjust hose inlet pressures. However, even with a difference of 40 to 50 feet in elevation along the towpath, the DU decreases by only about 40 percent.

(v) Changes in wind speed and/or direction can greatly affect DU, especially if the wind direction changes appreciably during the operation in adjacent towpaths (blows from the left in Figure WA687.51.11 one day and from the right the next day). However, if the system is managed to operate approximately 24 hours in each towpath, as in the example test, wind problems are minimized. The traveler is in about the same relative position along adjacent towpaths at a given time of day, when wind speed direction are most likely to be similar.

(6) Potential application efficiently (E_h) should be determined in order to evaluate how effectively the system can utilize the water supply and what the water losses may be. Then the total amount of water required to irrigate the field can be estimated. E_h is calculated from the ratio of the average low-quarter depth caught in the containers to the average depth applied. The average depth applied, d (in inches), is calculated from a constant times the total traveler discharge (the sprinkler discharge plus the piston discharge, if the traveler is driven by water piston) divided by the towpath spacing and the sprinkler's travel speed.

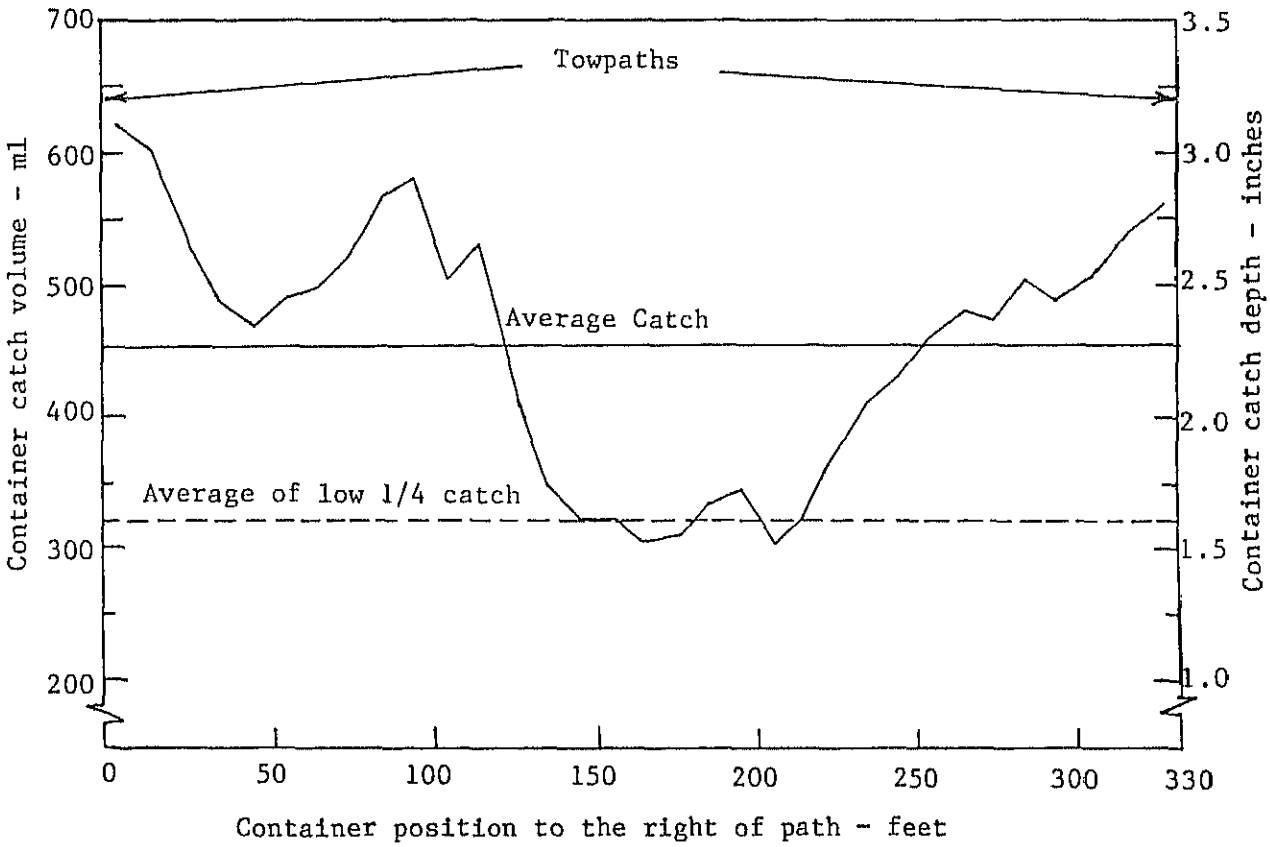
$$d = \frac{96.3}{60} \times \frac{\text{sprinkler plus piston discharge (gpm)}}{\text{path spacing (feet)} \times \text{travel (feet/min)}}$$

From the sample data given on lines 9, 10, and 11, and computed in line 14 on Figure WA687.51.10, the average depth applied is 2.43 inches. The E_h with a low one-quarter depth of 1.61 inches is:

$$E_h = \frac{1.61 \times 100}{2.43} = 66 \text{ percent}$$

This is a reasonable value for the central portion of a traveler irrigated field with such wide towpath spacings; however, the E_h around the boundaries will be much lower.

Figure WA687.51.12 - Profile of Overlapped Container Catch Data From Traveling Sprinkler Evaluation



(7) Application efficiency. Effectiveness of the use of the traveler system can be estimated by how much of the applied water is stored in the soil and available for consumptive use and by comparing the E_q and the E_h. The fine sandy loam soils in the area tested hold about 1.5 inches per foot available moisture. Depth of the root zone of the corn was 4.0 feet at that time, and a 35 percent MAD was considered ideal. This gives a MAD of 2.1 inches. The field checks showed that smd near the towpath and at the 1/4

point where 2.1 inches and 2.2 inches, respectively, while in the middle of the strip it was 3.7 inches. The minimum depth of 1.6 inches was applied in the middle of the strip where the SMD was 3.7 inches (Figure WA687.51.11 and WA687.51.12). Thus, the system did not apply a full irrigation; no water was lost to deep percolation in the low-quarter application area; and $E_q = E_h = 66$ percent. Apparently, much of the area had been receiving adequate irrigation because the SMD and MAD over much of the strip were less than or equal to the depth of application. However, under-irrigation had created a cumulative deficit in the middle areas between towpaths. This deficit was beginning to affect the corn growth as evidenced by stunted plants midway between paths.

(8) Application rate. The gun sprinklers, properly operated, normally used on travelers can produce a rather flat pattern of distribution. That is, if the traveler vehicle were standing still, the application depth or application rate over most of the wetted area would be fairly uniform. An estimate of the average application rate, I, in inches per hour can be obtained from a conversion constant times the flow (in gpm) from the sprinkler divided by the wetted area. The wetted area depends on the angle of the wet sector (for part-circle sprinklers).

$$I = \frac{96.3 \times \text{sprinkler discharge (gpm)} \times 360}{\text{towpath spacing (feet)}^2 \times \text{wet sector (degrees)}}$$

For the sample evaluation (Figure WA687.51.10, lines 6 and 9), the sprinkler discharges 500 gpm and the towpath spacing is 330 feet with the part-circle sprinklers set for a 15° dry sector, i.e., 345° wet. The estimated average application rate computed in line 13 of Figure WA687.51.10 is I = 0.45 in/hr. This is a fairly high application rate for the fine sandy loam soils which could cause infiltration and runoff problems in steeper areas or where the soil is in poor condition (tilth).

(9) Analysis and recommendations. Many of the observations and some recommendations that can be made from the additional data on Figure WA687.51.10, plus the DU and E_h computations, have already been referred to here in other sections about sprinkle evaluation.

(i) Operational checks. The pressure of 100 psi at the nozzle is ideal for good breakup of drops. The total recorded losses of 37 psi (10 psi in the drive turbine and 27 psi in the 4-inch by 660-foot flexible hose) are reasonable. (See Figure WA687.51.10, lines 6, 7, and 12.)

(ii) Runoff. Infiltration did not appear to be a problem. The fine sandy loam soils could receive the light application at 0.46 iph with no runoff, and the towpath remained relatively dry.

(iii) Under-irrigation. After reviewing the full value of the operation, it was concluded that the amount of under-irrigation was acceptable, due to the fact that the area receives considerable summer rain which may offset the cumulative SMD along the center of the strips;

furthermore, the large area of the field and the restricted supply of water made it impractical to increase the average depth of application very much. Only improvements in DU and possibly slightly higher flow rates would be practical.

(iv) Improvements. The only major improvement necessary would be to increase the DU. However, it is not reasonable to narrow the towpath spacing during the growing season. If this spacing were reduced, the numbers of towpaths and consequently the number of days between irrigations would not need to be increased. Several practical possibilities for improving the DU might be tried in the following order:

(a) Increase the angle of the dry area up to between 90° and 120°.

(b) Try a taper bore nozzle, which would have a greater range for the same discharge and pressure.

(c) Increase the nozzle size to the next larger sized ring nozzle.

(d) Reduce tow path widths before next season.

(v) Edge effects. The outside towpaths of the present system are placed 150 feet inside the field boundaries. The field was laid out similarly to what appears in Figure WA687.51.11. There were 8 towpaths across the 2,610-foot width of the field--2,640 feet less a 30-foot road right-of-way. Data on Figure WA687.51.10, line 17, indicate this layout should give, reasonable application (1.7 inches) on the downwind side but a very light (0.4 inch) watering along the upwind side. The traveler started at one end of the field and stopped at the opposite edge. This resulted in considerable overthrow by watering the ends of the field (Figure WA687.51.11) fairly well. The full length of the 660-foot hose was needed because it had to be dragged through the 1,320-foot length of the towpaths. The E_h of 66 percent computed earlier was for the central portion of the field; however, because of poor uniformity along the boundaries where there is insufficient overlap, plus water that is thrown outside of the planted area (see Figure WA687.51.11), the overall field efficiency is considerably lower. For the 80 acre field evaluated, the overall field E_h was only estimated to be 52 percent. Much of this reduction in efficiency is due to poor uniformity along the edge of the field where the traveler is started and the edge where it stops. (See Figure WA687.51.11.) To minimize the decrease in E_h along the ends of the towpaths, the traveler would need to be started about 150 feet outside the edge of the field and allowed to travel 100 feet past the opposite edge of the field; these distances are unequal because of the wind. If the field were square (160-acre) with towpaths twice as long (2,640 feet), the relative and effects would be half as great and the overall field E_h would have been approximately 57 percent.

(10) Summary. The DU of 71 percent and the E_h of 66 percent found in the evaluation are typical for performance of supplemental irrigation systems used on corn. The main problems in this system are associated with poor DU, in which the dryest part of the pattern occurred in the mid-portions of the

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strips between towpaths. Changing angle of the dry area of the sprinkler or the type or size of the sprinkler nozzle may improve the DU. Special control systems which essentially eliminate the reduction in E_h caused by the poor uniformity along towpath ends are in the pilot operation stage. These control systems change the angle of the part circle sprinkler and the speed of travel upon leaving and approaching the towpath ends. For the 80 acre field evaluated, such a control system could increase the overall field E_h by about 10 percent or up to approximately 62 percent.

WA687.52 Furrow irrigation evaluation.

(a) The primary purposes for making an evaluation of a furrow or corrugation irrigation system are:

(1) To aid in assigning a named soil or group of soils the proper furrow intake family (I'f) for design purposes,

(2) To determine the adequacy of the design criteria when irrigated under the specific field conditions existing on an individual farm.

(3) To provide recommendations for improving irrigation water management.

(b) Identification of the furrow intake family associated with a soil series or phase, and placement into irrigation guides, may require evaluations on only a few representative sites in an area. The second purpose would require an evaluation on a specific field under a given set of conditions.

(c) Inflow and outflow measurements representing an entire irrigation set is most desirable when making an evaluation for the purpose of placing a soil in a furrow intake family (I'f). An alternative is to measure inflow and outflow for the last one-fourth to one-half of the total irrigating time. When all irrigations during the season cannot be measured, it is desirable to make the furrow intake evaluations during the middle of the irrigation season. This represents more average conditions, as higher intake rates occur [illegible] part of the irrigation season and lower intake rates occur toward

should be observed in conducting furrow

sts to determine intake characteristics
tes that are representative of the soil
e no recognizable difference in soils
valuated. The furrows should have a
rade between the inflow and outflow
ows should not be evaluated, however,
a group of furrows.

(2) Soil moisture. Onsite estimates of soil moisture should be made when evaluating a specific field. Where feasible, studies should be made when moisture conditions indicate that a normal irrigation application is needed.

(3) Cropping history. The present crop, stage of growth and previous crop grown should be recorded.

(4) Soil conditions. The condition of the furrows (freshly cultivated, cloddy, dispersed soil, smoothed by previous irrigation, etc.) has a marked influence on furrow intake rate and should be recorded. The number of times the field has been irrigated since the start of the irrigation season, and since the last furrowing operation, should also be known.

(5) Flow measurements. The flow of water in furrows can be measured in several ways. Inflow can be measured volumetrically, with a calibrated container and stopwatch, where the flows are small (up to about 20 gpm) or with a number of small measuring devices (e.g., orifice plates, V-notch weirs, trapezoidal flumes, etc.). Outflow can be measured with any of the above small measuring devices. See NEH Section 15, Chapter 9, "Measurement of Irrigation Water," for additional information. Care should be taken in the selection and installation of the measuring devices, so as not to block the furrow flow. The outflow measuring device should be located at a point where backwater does not affect the flow.

(6) Flow control. The inflow rate should be constant throughout the test. If the inflow rate changes, the volume of water in channel storage in the furrow also changes. This change in channel storage must be measured in order to determine how much of the flow is going into the soil as intake.

(7) Installation. At least three adjacent furrows or furrow groups should be measured on each test site. Adjacent furrows on each side of the test area should also be irrigated simultaneously.

(e) Procedure.

(1) The furrow length between the inflow and outflow measuring stations should be measured and not estimated. Normally, the full furrow length should be evaluated. The minimum evaluation length should be 200 to 300 feet for high intake rate soils, and 500 to 600 feet for low intake rate soils. The average furrow slope and furrow cross-sections needs to be determined. Readings should be taken to determine uniformity of grade. The furrow stream introduced should not cause erosion. It is, however, desirable to use the same flow rate which the farmer normally uses as part of the evaluation, even if the flow rate results in erosion. The minimum flow to be used should be large enough to produce a fairly uniform rate of advance. Record the time water starts flowing in each furrow.

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Adjust streams so that flows into all furrows are approximately equal. Periodically measure the inflow stream. Record the time when water starts to flow through the outflow measuring device. Periodically measure and record the outflow stream. When ending the intake evaluation before completion of the full irrigation, take final inflow-outflow measurements at the same time.

(2) Although not needed for the intake evaluation, it is desirable to measure the wetted bulb approximately 24 hours after the completed irrigation to determine the wetting pattern. For these measurements, a soil moisture probe will readily define the boundary line between the wet soil and relatively dry soil. The opportunity time to obtain this wetted pattern should be included with the sketch of the bulbs. Another method which can be used is to excavate a trench perpendicular across the furrow and observe the wetted area.

(f) Computation and evaluation.

(1) Compute the inflow and outflow volumes. For each furrow or groups of furrows, determine: the average inflow (Q_1), the inflow time (T_1), and the cumulated volumes of inflow (V_{in}) and outflow (V_{out}) at the end of the irrigation and at selected intermediate times. The minimum selected intermediate time should be such that flow has reached the outflow station, the flow is reasonably uniform, and surface storage in the furrow reach is stable. For each furrow, determine a minimum of three points on the cumulated intake vs. time line. Each point is described by the coordinated:

(i) Cumulated intake for the furrow length (F_{ave}).

(ii) The average opportunity time for intake to occur in the furrow length (T_o).

(2) The average cumulated intake ($F_{(0-L)}$) is determined by the following equation:

$$F_{(0-L)} = \frac{1.6041}{L(P)} \quad (V_{in} - V_{out} - V_s) = \text{inches}$$

where:

V_{in} = volume of inflow, gallons
= $Q_1 \times T_1$
Q_1 = average inflow rate, gpm
T_1 = inflow time, minutes
V_{out} = volume of outflow, gallons
= $Q_2 \times T_2$
P = width over which intake occurs, equal to wetted perimeter plus a constant
Q_2 = average outflow rate, gpm
T_2 = outflow time, minutes
V_s = surface storage in gallons in evaluation length, l
L = evaluation length, ft (distance between inflow & outflow measuring stations)

The intake width (p) can be determined by the following evaluation:

$$P = 0.2686 \left[\frac{Q_1 \times n}{S^{0.5}} \right]^{0.4247} + 0.75$$

where:

P = intake width, ft
Q_1 = average inflow rate, gpm
n = Manning coefficient of roughness
S = furrow slope, ft/ft

Surface storage (V_s), in lieu of actual measurements, can be estimated by the following:

$$V_s = L\ (0.09731) \left[\frac{Q_1 \times n}{S^{0.5}} \right]^{0.7527} - 0.00574$$

The average opportunity time (T_o), in minutes, may be determined as the average of the inflow time (T_1) and the outflow time (T_2).

or:

$$T_o = 0.5\ (T_1 + T_2)$$

(3) When the advance is curvilinear, a more exact value of average opportunity time can be obtained by averaging the opportunity time at various points along the furrow length, or by integration of the advance curve.

(4) Computation of the opportunity time is facilitated by converting the 24-hour clock time used to record the time of measurements, to decimal hours. For example, the 24-hour clock time of 1120 would become 11.33 (11 + 20 ÷ 60).

(5) A plot of cumulated inflow and outflow in gallons vs. clock time since the start of irrigation facilitates determination of the intake volume at any elapsed time, when simultaneous measurements of flow are not made. Subtraction of the cumulated outflow from the cumulated inflow yields the intake and storage. subtraction of the surface storage yields the volume of intake, in gallons, at any time.

(6) The cumulated intake (F(0-L)) and associated opportunity time (To) points, when plotted on log-log paper, define the measured intake line. This line is then compared to the intake family lines, Figure WA685.52.2 for determination of the most representative intake family. This is illustrated on Figure WA687.52.3 for example.

(g) Example. Determination of furrow intake family from trial measurements where the total irrigation is measured (using data contained on Furrow Intake Data sheets, Figures WA687.52.1 through WA687.52.3). For brevity only furrow 1 will be evaluated long hand.

WA687.52(g)

given:

Soil: Warden loamy fine sand

L = 900 feet
S = 0.003 ft/ft

$$P = (0.2686)(14.09 \times .04/.003^{0.5})^{0.4247} + .75$$

P = 1.47 feet

$$V_s = 900 \left[(.09731)(14.09 \times .04/.003^{0.5})^{0.7527} - .00574 \right]$$

V_s = 500 gallons
W = 2.5 feet
Q_1 = 14.09 gpm n = .04

plotting points

T_o = 0.5 x 60 min/hr (inflow time (hrs) - outflow time (hrs))

$$aT_o^b + c = \frac{1.6041}{\text{Length} \times P} \text{ (inflow volume (gal) - outflow volume (gal) - surface storage (gal))}$$

intake at 1701 hours (17.0)

T_o = 0.5 x 60 ((16.5 - 8.5) + (17.0 - 11.0)) = 420 minutes

$$aT_o^b + c = \frac{1.6041}{900 \times 1.47} (6764.0 - 3060 - 0) = 4.49 \text{ inches}$$

intake at 1430 hours (14.5)

T_o = 0.5 x 60 ((14.5 - 8.5) + (14.5 - 11.0)) = 285 minutes

$$aT_o^b + c = \frac{1.6041}{900 \times 1.47} (5090 - 1771 - 500) = 3.42 \text{ inches}$$

intake at 1330 hours (13.5)

T_o = 0.5 x 60 ((13.5 - 8.5) + (13.5 - 11.0)) = 225 minutes

$$aT_o^b + c = \frac{1.6041}{900 \times 1.47} (4235 - 1212 - 500) = 3.06 \text{ inches}$$

intake at 1230 hours (12.5)

T_o = 0.5 x 60 ((12.5 - 8.5) + (12.5 - 11.0)) = 165 minutes

$$aT_o^b + c = \frac{1.6041}{900 \times 1.47} (3380 - 666 - 500) = 2.68 \text{ inches}$$

other points

T_o = 50 min, F = 1.35 in.

T_o = 100 min, F = 1.99 in.

T_o = 600 min, F = 5.33 in.

Plot cumulative intake vs. opportunity time, Figure WA687.52.5 and compare o Figure WA685.52.2. Find intake family (I'_f) = 0.5 or from program vailable for programmable calculators (I'_f = 0.42). These results are airly close. By averaging the three furrows with I'_f = 0.42, 0.50, and .62 respectively, an average I'_f would = 0.51 or for a family assignment on imilar soils without an evaluation a I'_f = 0.50 could be assumed.

Remember that intakes will vary during the season as well as from one ield to another. The value should be used with discretion when reviewing lternatives derived from its use.

(EXAMPLE FIGURES FOLLOWING)

Figure WA687.52.1
FURROW INTAKE DATA SHEET

Owner J. Walker CD Benton County Benton

Legal Description S36 - 31 N - 24E Date 8/5/85 By: SBT

Soil Series-Mapped Warden FSL Actual 1fs Slope 0.5%

Furrow Condition (Circle): Loose Slick (packed) (Firm)

Restrictive Layers: Surface Crusting - Yes ___ No X
Tillage Pan - Yes X No ___ Depth 8"
Other None Depth ___

Normal Set Time 8 Hrs. Frequency 8 Days Ave. Stream 14 GPM

Soil Moisture (Before) Soil Moisture ___ Hrs (After)

35% 6" 50% 12" 70% 36" ___ 6" ___ 12" ___ 36"

Present Crop Corn Crop 84 Yr Potatoes Crop 83 Yr Wheat

Furrow Erosion:

Upper Third (Circle)	Deposition	None	Slight	Moderate	(Severe)
Middle Third (Circle)	Deposition	None	(Slight)	Moderate	Severe
Lower Third (Circle)	(Deposition)	None	Slight	Moderate	Severe

Furrow Spacing (in.) 30 Irrigation Pattern (Adjacent) Every ___ Furrow

Average Furrow Length 900 Stream Size to Field 700 gpm

Field Width 1000 Ft Normal Seasonal Number of Irrigations 14

Irrigation Number (Circle): 1st 2nd 3rd 4th 5th 6th 7th 8th 10th

Comments: (Such as crop condition, excessive wet areas, field grade uniformity, etc.)

Crop appears uniform in growth except at tail end where it appears drowned out due to excessive tailwater. High amount of runoff occurring. Field grade very uniform.

(WA210-VI-WAIG, OCTOBER 1985)

Furrow Profile: Operator J. Walker Date 8/5/85

Ave. Slope 0.003

Station	0+00	1+00	2+00	3+00	4+00	5+00	6+00	7+00	8+00	9+00			
Rod Reading	4.96	5.26	5.55	5.84	6.16	6.46	6.75	7.01	7.30	7.66			

Ave. I_f = 0.51

1. Furrow Test Length (Ft.) 900

Clock Hours	Q Inflow	Q Outflow
0830	0	---
0835	12.6	---
0840	14.2	---
0900	14.3	---
1100	14.3	0
1110	--	4.3
1130	--	8.4
1230	14.3	8.9
1330	14.3	9.3
1530	--	9.3
1625	14.2	---
1630	0	9.3
1640	0	7.9
1701	0	0

I_f = 0.42

2. Furrow Test Length (Ft.) 890

Clock Hours	Q Inflow	Q Outflow
0830	0	---
0837	12.5	---
0842	14.4	---
0903	14.1	---
1040	14.0	0
1100	--	2.9
1135	--	7.6
1235	14.5	8.5
1335	14.5	9.5
1535	--	9.5
1625	14.0	---
1630	0	9.0
1645	0	6.5
1650	0	0

I_f = 0.50

3. Furrow Test Length (Ft.) 910

Clock Hours	Q Inflow	Q Outflow
0830	0	
0838	12.8	
0845	14.5	
0905	14.4	
1115	14.4	0
1130	--	3.0
1145	--	7.5
1240	14.6	8.2
1340	14.6	9.0
1540	--	9.0
1625	14.5	--
1630	0	8.7
1640	0	0

I_f = 0.62

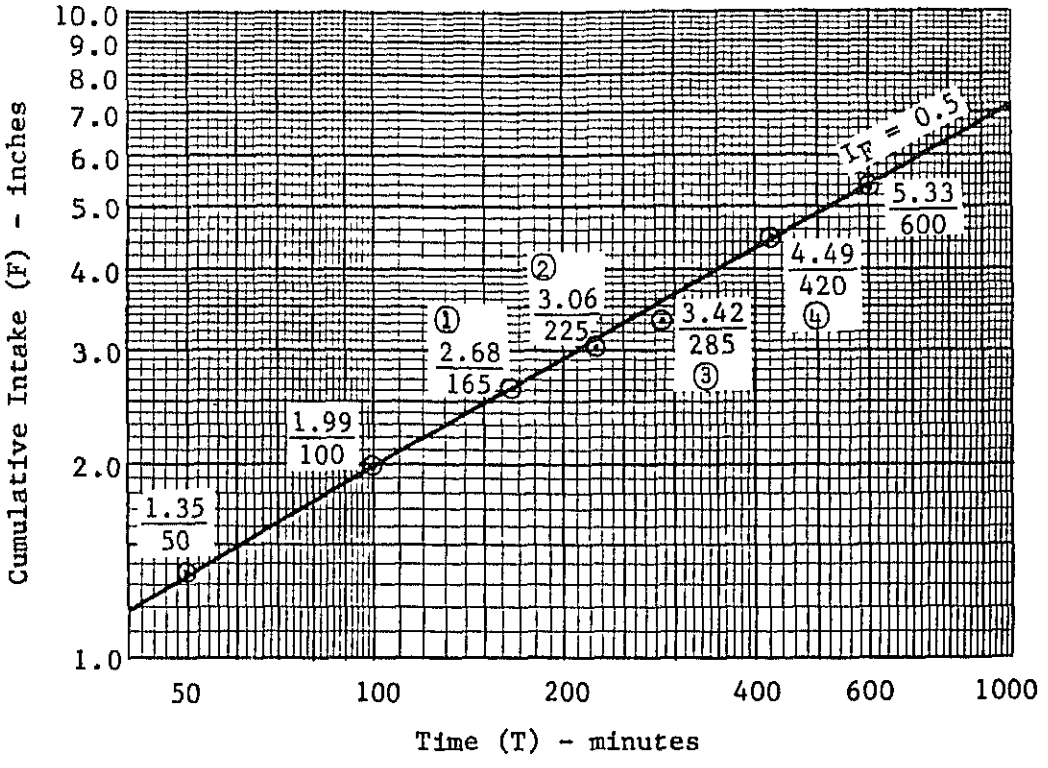
(WA210-VI-W)

WA687.52.2

WA687.52.3

Figure WA687.52.3 - Cumulative intake vs. time.

Example #1 - Entire Irrigation Measured



NOTE:

1. For line of best fit comparison, using family of curves, Figure WA685.52.2 or $I_F = 0.5$.

2. For linear regression analysis, $F = aT^b$, a = .1567, b = .5514, or $F = .1567T^{.5514}$ or $I_F = 0.42$.

3. For curvilinear regression analysis, using points ① through ④, a line represented by the equation, $F = aT^b + c$ gives: $F = .00029T^{1.4941} + 2.097$ or $I_F = 0.61$.

Figure WA687.52.4
FURROW INTAKE DATA SHEET

Owner _____ CD _____ County _____

Legal Description _____ Date _____ By: _____

Soil Series-Mapped _____ Actual _____ Slope _____

Furrow Condition (Circle): Loose Slick (packed) Firm

Restrictive Layers: Surface Crusting - Yes___ No___
Tillage Plan - Yes___ No___ Depth _____
Other_____ Depth _____

Normal Set Time _____Hrs. Frequency _____ Days Ave. Stream _____GPM

Soil Moisture (Before) Soil Moisture _____Hrs (After)

_____ 6" _____ 12" _____ 36" _____6" _____12" _____36"

Present Crop _____ Crop _____Yr _____ Crop _____Yr _____

Furrow Erosion:

Upper Third (Circle)	Deposition	None	Slight	Moderate	Severe
Middle Third (Circle)	Deposition	None	Slight	Moderate	Severe
Lower Third (Circle)	Deposition	None	Slight	Moderate	Severe

Furrow Spacing (in.) _____ Irrigation Pattern Adjacent Every ____ Furrow

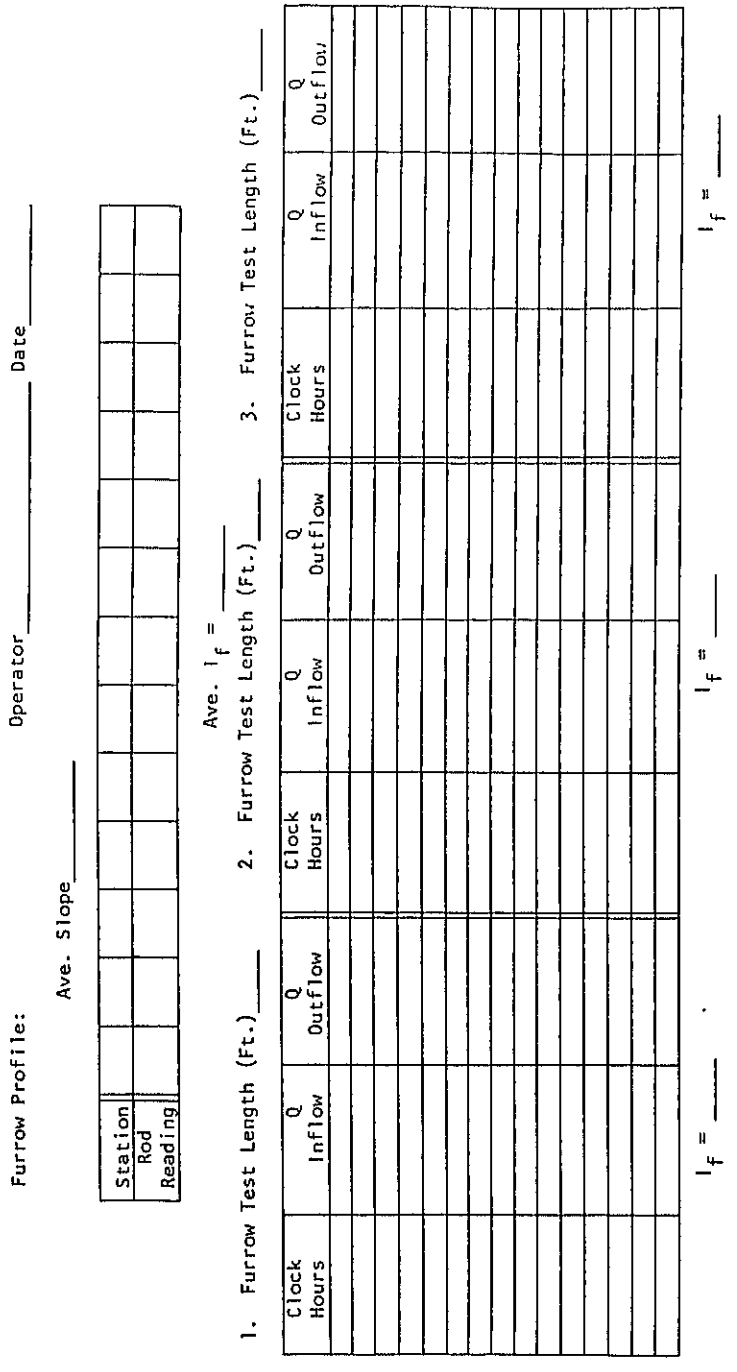
Average Furrow Length _____ Stream Size to Field _____

Field Width _____ Normal Seasonal Number of Irrigations _____

Irrigation Number (Circle): 1st 2nd 3rd 4th 5th 6th 7th 8th ___

Comments: (Such as crop condition, excessive wet areas, field grade uniformity, etc.)

WA687.52.5


Furrow Profile:
Operator
Date
Ave. Slope
Station
Rod Reading
Ave. I_f =
1. Furrow Test Length (Ft.)
2. Furrow Test Length (Ft.)
3. Furrow Test Length (Ft.)
Clock Hours
Q Inflow
Q Outflow
I_f =
I_f =
I_f =

WA687.53 Contour ditch irrigation evaluation.

(a) Many onsite observations can be made to evaluate an irrigation system without making detailed studies. The following information should be obtained:

(1) The rate at which water is delivered (cfs or gpm) per irrigation or set, and the number of sets needed to irrigate the entire field.

(2) The approximate time required for the stream front to reach the lower end of the field after water has been turned on to a set.

(3) Observe the time in hours required to irrigation each set and the number of sets required to irrigate the entire field.

(4) How often (frequency) an irrigation is needed to replace the estimated consumptive use of the crop for the period.

(b) From (2) and (3) above, estimate uniformity of irrigation. For nearly uniform irrigation of a field, the stream front should reach the lower end of the run within one-fourth of the total time needed to refill the soil in the root zone. Thus, the "opportunity time" for the soil to absorb water will be about 25 percent greater at the upper than at the lower end of the field. But the water intake rate of the soil decreases with time, frequently inversely proportional to the square root of the elapsed time. So the amount of water absorbed during this extra time will be less than at the lower end, and the average deep percolation loss for the full length of the run would be in the magnitude of five percent. If the results of an onsite observation were one hour for the steam front to reach the lower end of the field. Then water should not be applied for longer than four hours per set. For, observation (4), we can determine the approximate moisture deficiency or the water application needed per irrigation, if we know the peak consumptive use of the crop in that area.

(c) For example, if the frequency of irrigation needed is ten days, and the consumptive use for the crop is 0.30 inches per day, then 3.0 inches net needs to be applied. A quick check as to the amount of water needed can also be determined by using the "Feel Method". A comparison between the water needed and that applied will provide an estimate of the irrigation efficiency being achieved. The basic formula to remember is: AD = QT. This may be more easily recognized as the basic relationship, 1 ac-inch per hour = 1 cfs where:

D = Depth of water applied in inches
A = Area in acres
Q = Flow in cfs
T = time in hours

WA687.53(e)

(d) The above relationship is true using gross application. Using net application, the formula is: dnA = QTE, where dn = net application and E = efficiency.

(e) This formula can be used to check the compatibility of each factor when all four values are determined from onsite observation and should provide guidance as to where improvements can be made. A modification of this formula is:

$$Q = \frac{453\ Ad}{FH}$$

where:

A = area irrigated in acres
d = depth of application
F = number of days allowed for the completion of one irrigation
H = number of actual operating hours per day

SUBPART F - INTAKE RATE AND MAXIMUM APPLICATION
RATE MEASUREMENT PROCEDURES

WA687.60(b)(1)

WA687.60 Sprinkler - set type.

(a) Locating soil sites. Soil series were included in the study because they represented extensive irrigable acreage or because they had significant differences in properties such as texture, organic matter content, mineralogy, or water storage capacity. Sites were located and the soils at each location were described by soil scientists from the Soil Conservation Service. Generally, three to six sites of each soil type were selected to test the intake rates. Soil sites were selected using the following criteria:

(1) The site was representative of a single series and type.

(2) The site had a slope gradient of greater than 2%.

(3) The site was accessible with testing equipment.

(4) The soil surface condition was equivalent to a tilled, bare surface after at least one irrigation (if vegetation was present, it was cut and removed so that the soil surface was clearly visible.

(5) Moisture content of the surface soil was near field capacity if possible.

(b) Infiltration testing procedure. The procedure for determining intake rate was developed by Tovey and Pair 1/.

(1) It utilizes a portable trailer-mounted recirculating unit with a sprinkler head mounted within a circular shield. The test equipment was set up so the sprinkler threw with the wind. The sprinkler was run for one or two revolutions to mark the "fan" pattern from the sprinkler.

1/ Rhy Tovey, "A Portable Irrigation Sprinkler Evaluation Device", Agricultural Engineering 44(12)D:672-673, December 1963.

Rhy Tovey and C. H. Pair, "Measurement of Intake Rate for Sprinkler Irrigation Design", Transactions o the ASAE 9(3):359-363, 1966.

687.60(b)(2)

(2) Cans to measure application rates were set at five-foot intervals
roups of three down the center of the fan formed by the spray pattern.
was taken to avoid foot traffic in the area where the infiltration
vations were made.

(3) If the soil moisture content was less than field capacity, the soil
re-irrigated with about 350 gallons of water to a minimum depth of 3 to 6
s. The test was run about one hour after the conclusion of the
rrigation. If the "intake rate" dropped during the "test" run, the run
onsidered a wetting operation and another run was made for "test"
ses.

(4) The tests usually were run for one hour with observations taken
15 minutes. In coarse-textured soils with rapid intake rates, the
ed water supply made it necessary to run the tests for shorter lengths of
and convert the can readings to the "inches per hour" rate. Observations
these conditions were made at each quarter of the total test time.

Under		Adequate		Over
2	3	4	5	6

- Water infiltrated within 1/4 of the time required for the sprinkler spray to return to the point observed.

- Water infiltrated within 1/2 of the time required for the sprinkler spray to return to the point observed.

- Water infiltrated within 3/4 of the time required for the sprinkler spray to return to the point observed.

- Water infiltrated by the time the sprinkler spray returned to the point observed.

- Water was ponded at the surface when the sprinkler returned but no runoff has occurred.

(6) At the conclusion of the test, the can catchments were measured and
ted to application rates expressed in inches per hour. Rating number 4,
ate, was the recorded infiltration rate of the soil for each specific
It is the maximum application rate that should be used with a sprinkler
n on the type of soil tested.

(7) Figure WA687.60.1 aids in documenting this test.

(8) Comments as to wind condition and ground condition greatly aid in
ining whether the test is an actual representation of the soils
.ler intake rate (iph).

(9) This test can be modified for sprinkler systems by replacing an
ng head with one that has an adjustable pin to regulate width of throw
that has an adjustable pin to regulate width of throw or one that can
usted for a part circle.

WA687.60.1

Figure WA687.60.1
SOIL INTAKE RATE TEST FOR SPRINKLER DESIGN Ref. No._____

Date_____

Farm_____ Soil Type_____

Sprinkler Nozzle Size_____ Pressure_____

Test Started_____ Test Ended_____ Total Time_____ minute

Distance from spr.	Can Catchment						Appli. Rate	Observed Intake Rate		
	Row 1	Row 2	Row 3	Total	Ave.	Adj. 1 hr.		1 2 under	3 4 adeq.	5 6 over
feet	cc.	cc.	cc.	cc.	cc.	cc.	"/hr.			
(1) 5										
(2) 10										
(3) 15										
(4) 20										
(5) 25										
(6) 30										
(7) 35										
(8) 40										
(9) 45										
(10) 50										
(11) 55										
(12) 60										
(13) 65										
(14) 70										

REMARKS:

Test Made b

WA687.61

WA687.61 Sprinkler - traveling (pivot system).

The maximum application rate should be field checked on each system evaluated. From visual observations the area which appears to be the wettest should be checked. This is usually near the end tower.

(a) Place five catch cans (spaced about ten feet apart) in a line perpendicular to the sprinkler line. One can should be directly under the nozzle when timing is started, with two cans forward and two cans behind the first can. Cover the cans with plastic lids, small sheets of cardboard, wood or plastic bags.

(b) Remove covers (as quickly as possible) from all cans and start timing when nozzle is directly over center can. Observe intake characteristics of the soil throughout the test.

(c) After five or ten minutes operation, cover cans (as quickly as possible).

(d) Measure quantity caught. The can with the largest quantity will represent the average application rate for that time duration (5 or 10 minutes). This approximates the maximum rate when time of catch is this short.

(e) Compute rate: $\frac{(\text{\_\_\_\_\_ ml})(60)}{(\text{can factor})(\text{Time, in minutes})}$ = inches per hour (standard-size oil cans factor = 200)

or: $\frac{(\text{\_\_\_ inches})(60)}{(\text{Time, in minutes})}$ = inches per hour

(f) This test needs to be duplicated at other locations along the pivot sprinkler line, in the same area to eliminate the effect of nozzle pattern on the application rate.

(g) Note: Catch can spacing will have to be modified on fast-moving, low-pressure systems.

(h) Further tests need to be made closer in toward the pivot to determine the maximum soil intake rate for that site if the tests near the end tower does in fact show runoff. This point will not necessarily be easy to observe, until after some practice.

(i) Exhibit WA687.61.1 is a worksheet that will aid in completing this evaluation.

Subpart F - Intake Rate and Maximum Application Rate Measurement Procedures

Figure WA687 61.1 - SPRINKLER INTAKE/APPLICATION RATE TEST WA687 61 1

Owner_____ CD_____ County_____

Legal Description_____ Date__/__/__ By:_____

Soil Series-Mapped_____ Actual_____ Land Slope_____ (Abney)

Field Condition (circle): Pulverized Fine Clods (marbles) Medium Clods (egg) Large Clods (baseball)

Surface Crusting - Yes___ No___ Tillage Plan - Yes___ No___ Depth_____

Other Restrictive Layers: Kind_____ Depth_____

Subsoiled. Date__/__/__ Depth_____ Spacing_____ Direction_____

Tillage Implement	Date	Implement	Date	Implement	Date

Pitter or Dam Master (Spacing)_____ Other (describe)_____

Previous Crop History:

19___ _____ crop _____ yield 19___ _____ crop _____ yield

19___ _____ crop _____ yield 19___ _____ crop _____ yield

Field Residue (circle): None 0-199 Low 200-499 Medium 500-799 High 800+

Present Crop_____ Cropping Direction (circle): Contour Cross Slope Up & Down Slope

Cover Crop: Annual_____ (type) /___% Prennial_____ (type) /___%

Green Manure Incorporated: Date__/__/__ Tillage_____

Crop Canopy (circle): 0 to 10% 11 to 25% 26 to 50% 51 to 75% 76 to 100%

Average Sheet & Rill Erosion (check): None 0-2__ Slight 2-5__ Moderate 5-10__ Severe 10-20__ Very Severe 20+__

Concentrated Flow Erosion (check): Wheel Tracks___ Draws___ (slight, moderate, severe)

Irrigation System (circle): Center pivot Wheel line Hand line Big Gun Solid set Other_____

Can No.	Time			Volume of Water Caught (cc.)	Depth of Water Caught (Ins)	Intake Rate (Ins/Hr)
	Begin Test	End Test	Elapsed Time (Hrs)			
Average						

Comments:_____

WA687.61.1

INSTRUCTIONS FOR PERFORMING INTAKE/APPLICATION TEST

A. Select a field being irrigated in the normal manner by the farmer.

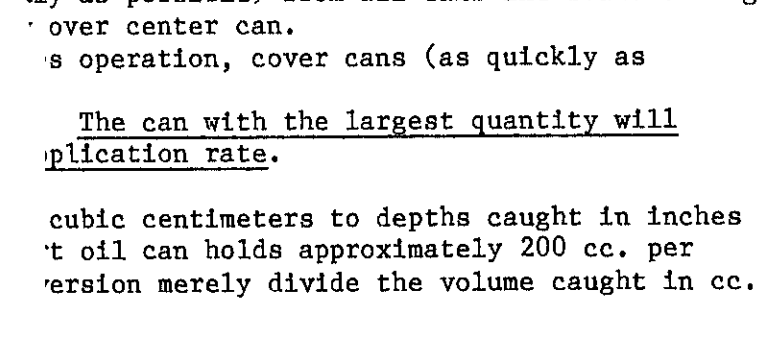
B. After irrigation has progressed long enough so that the soil has reached its basic intake rate, usually toward the end of the irrigation period, locate areas in the field where the water is absorbed in the same length of time as it takes for the sprinkler head to revolve and again spray the area. There should be no movement of water over the surface, and more than the slightest ponding is generally unsatisfactory.

C. Non-Motion Equipment (Wheel lines, Solidset, etc.)

1. Parallel to the nozzles place five one-quart oil cans, with the tops removed, at the selected locations. On soils with little cover, dig the cans slightly into the ground to prevent overturning. Where heavy cover is present, mount the cans with heavy rubber bands or stakes so that they are just above the top of the cover.
2. Record the time, in hours and minutes, at which can is placed in position.
3. Not less than one hour later (a longer period is preferable) remove the cans and record the pertinent time for each can, in hours and minutes.
4. Measure, and record, the volume caught in cubic centimeters by each can. An inexpensive graduate for this purpose is an ordinary glass or plastic baby bottle calibrated in cubic centimeters.
5. Compute and record, the elapsed time for each can in hours to the nearest .01 hour. For example: 1 hour 45 minutes = 1.75 hours.

D. Motion Equipment (Center pivots, Walking laterals, etc.)

1. Place five catch cans (spaced about ten feet apart) in a line perpendicular to the sprinkler line. One can should be directly under the nozzle when timing is started. Place two cans forward and two cans behind the first can. Cover the cans with plastic lids, small sheets or cardboard, wood, or plastic bags.



cly as possible) from all cans and start timing
over center can.
s operation, cover cans (as quickly as

The can with the largest quantity will
plication rate.

cubic centimeters to depths caught in inches
t oil can holds approximately 200 cc. per
ersion merely divide the volume caught in cc.

s computed by dividing the depth of water
ed time in hours.

WA687.62 Surface - Furrow or Corrugation

Determination of intake rates under this method of irrigation are directly tied to their evaluation procedure. Refer to Part 687.52.

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PART WA688 - FARM CONSERVATION IRRIGATION SYSTEMS PLANNING

SUBPART A - GENERAL

WA688.10 Introduction.

(a) The material in this section of the irrigation guide is intended to help soil conservationists and technicians assist landowners in planning their irrigation system(s).

(b) Basic to the planning process is the ability to determine which irrigation systems will fit site conditions. Part 684, Irrigation Method Selection and Part 685, Irrigation Method Design Criteria, will assist in this selection process.

(c) This part gives a logical approach to thinking through planning an irrigation system. It should be recognized that there will be many variations required on individual farms. The planner should feel free to adapt these variations as needed.

SUBPART B - IRRIGATION PLAN REQUIREMENTS

WA688.22(1)(iv)

WA688.20 Conservation irrigation.

(a) Conservation irrigation is defined as the use of irrigated soils and irrigation water in a way that ensures desirable production without wasting either of the water or soil resources. It means using cropping, irrigation and cultural practices that maintain the land in permanent agriculture. To an irrigator, conservation irrigation can mean saving water, controlling erosion, better crop yield, lower production costs, and continued productivity of the irrigated land.

(b) A conservation irrigation system is the complete arrangement of the delivery and application facilities needed to distribute irrigation water efficiently to all land served by the system. It is an integral part of a Resource Management System (RMS) and may be developed utilizing many RMS components, thus making it difficult to consider one without the other.

WA688.21 Plan requirement.

An irrigation plan is a component of an RMS. It may be simple or complex dependent upon the resource considerations that must be addressed. All plans, as a minimum should contain:

(a) An irrigation system plan, which provides for the delivery and application of the water.

(b) An irrigation water management plan, which provides for the proper use of water delivered. The plan should provide that data that can be used by the irrigator based on management ability and degree of expertise in irrigation.

WA688.22 Plan Components

An Irrigation Water Management plan, consists of planned conservation practices to help solve various conservation irrigation problems.

(1) Irrigation agriculture using center pivots may require one or more of the following practices:

(i) Crop residue use - surface residue to promote higher water intake rates, to reduce or eliminate runoff and translocation of applied water, and to reduce soil erosion to acceptable level. This aids in preventing sealing and crusting of the soil surface.

(ii) Irrigation system, sprinkler - to ensure a high-quality sprinkler irrigation system that distributes water uniformly over the irrigated area and does not exceed the intake rate of the soil.

(iii) Pipeline high pressure underground plastic - to carry water to center pivot systems without excess water loss.

(iv) Chiseling or subsoiling to breakup restrictive layers.

WA688.21(c)(1)(v)

(v) Damming or diking to prevent or reduce runoff.

(vi) Conservation cropping system including high residue and close growing crops in rotation with row crops and low residue crops.

(vii) Irrigation Water Mangement (IWM).

(2) Irrigated gravity surface systems may require practices such as the following:

(i) Irrigation land leveling - for more even water application down the length of the irrigation run, thus increasing crop yields and decreasing deep percolation of irrigation water below the crop root zone with its attendant loss of crop nutrients and downsteam sedimentation due to erosion.

(ii) Crop residue use - surface residue to promote higher soil intake rates in heavy soils and to reduce soil erosion to acceptable levels.

(iii) Irrigation system, surface - to ensure the installation of all components of a high-qaulity surface irrigation system.

(iv) Irrigation water conveyance, pipelines, ditch and canal lining to reduce excessive water losses because of seepage from unlined ditches to decrease labor requirements, and to increase total water availability.

(v) Irrigation Water Management (IWM).

(3) Mountain meadow irrigation systems may require some or all of the following practices:

(i) Irrigation field ditch - to carry irrigation water to selected locations. It may not be economical to line a ditch or pipe water because of inadequate net returns to justify installation costs.

(ii) Irrigation system, surface - to ensure the installation and management of a fairly uniform surface application of available irrigation water at irrigation frequencies based on crop water needs.

(iii) Land smoothing - to level off high spots and fill in low areas to promote more efficient application.

(iv) Pasture and hayland management - to maximize animal carrying capacity or hay production by prolonging the life of desirable forage species and by improving the quality and quantity of forage.

(v) Surface draiange - to carry off excess water to increase yields and prolong life of desirable forage species.

(vi) Irrigation Water Management (IWM).

SUBPART C - IRRIGATION SYSTEM PLAN CONTENT

WA688.30 Irrigation system plan.

(a) Irrigation water should be applied uniformly and efficiently. In furrow irrigation land slopes should be as uniform as possible. The length of run should be adequate for good application. In sprinkler irrigation, the sprinkler heads should be spaced properly to get good uniformity of application whether center pivots, side rolls, traveling big guns, permanent solid set, movable solid set, etc., are used. Irrigation efficiency should be high.

(b) Tailwater should be reused when possible or disposed of safely.

(c) Storm water should be removed from the site without excessive erosion or other problems.

(d) The water supply should be measured on an on-going basis so determinations can be made as to irrigation efficiency and proper water use. Rate of flow (gpm or cfs) and total water used (ac-ft or ac-in) should be measured.

(e) Access should be provided to all areas for easy operation of the irrigation system, normal farming operations and removal of produce. This may involve culverts in ditches, access roads, etc.

(f) Cost guidelines should be provided for installation and operation of the irrigation system, including energy costs.

WA688.31 Planning steps.

(a) Preliminary considerations.

(1) Consider the whole farm or ranch unit even if the cooperator is interested in only one field. This will ensure that pipelines, ditches, etc., will be of an adequate size and elevation to service the rest of the land unit. Implementation of the plan may begin with one field or one ditch, or one pipeline and may continue for several years. Revisions may be necessary before the whole system is installed.

(2) The cooperator may have some strong feelings about certain systems. At the same time, the cooperator deserves information on the best available systems that will meet his needs. Pros and cons, including labor requirements and economic consideration, of the "best fit" systems need to be provided. The cooperator can then make a logical choice from the alternatives presented.

WA688.31(a)(3)

(3) What is the availability, quality, and adequacy of the farm water supply? How is the irrigation water delivered and on what schedule? An adequate source of good quality water must be available or there must be the possibility of developing one.

WA688.32 Basic data needs.

(a) Soils.

(1) Determine the intake family if considering surface irrigation methods - furrow intake family for furrows; maximum sprinkler rate for sprinkler irrigation if sprinklers are being considered.

(2) Develop monthly water budgets based upon the soil water holding capacity if this is the limiting factor in determining water applications.

(b) Crops.

(1) Compare water availability to crop use. Recommend crop changes where shortage exists, or review planned deficit irrigation as an alternative.

(2) Develop monthly water budgets if the crop rooting depth or allowable depletion level if this is the limiting factor in determining water applications.

(c) Topography. Show high points in each field and direction of irrigation and drainage. A survey with an engineering instrument may be needed.

(d) Water supply quantity, quality, location and elevation. Determine if the amount available and quality is adequate during the season for crop selections and that the water is available or can be delivered to the elevation needed to put all the desired ground under irrigation.

(e) Existing physical features. What is the access to all parts of the irrigated area? Location of public roads, utility lines, buildings, other?

(f) Subsurface features. Location of seeps and how to cut them off; general drainage installed or needed?

(g) Existing irrigation system. Location, sizes, condition. Is system adequate? Will it fit under new proposed system.

(h) Present farm operations. What equipment is used? What are planned future operations: eighth-row or four-row equipment is used, how will it affect set size?

WA688.33 Planning the system.

Decide on the type(s) of systems that will be used. Sprinkler, border, basin, trickle, furrow, etc., develop alternatives for each practical system.

(1) Method of irrigation,

(2) Workability, shape and access to field,

(3) Direction of irrigation, and

(4) Benefits to be derived from the change.

The irrigation system plan should consider, as a minimum, the following based upon alternative(s) selected:

(a) Furrow or corrugation irrigation. Elements to consider include:

(1) Use of gated pipe;

(2) Ditches with siphons;

(3) Turnout structures;

(4) Irrigation slope, cross slope;

(5) Length of run;

(6) Tailwater recovery or disposal;

(7) Furrow spacing, and

(8) Automation.

(b) Sprinkler irrigation. Elements to consider include:

(1) Type of system--center pivot, side roll, solid set, traveling big gun; hand move; with permanent or portable mains;

(2) Spacing of sprinkler heads;

(3) Maximum application rate;

(4) Lateral and mainline pressure;

WA688.33(b)(5)

(5) Sprinkler head discharge;

(6) Lateral spacing, and

(7) Automation.

c) Border irrigation. Elements to consider include:

(1) Length of run;

(2) Tailwater disposal;

(3) Border strip widths;

(4) Grade of border;

(5) Border turnout structures, and

(6) Border dike heights.

WA688.34 Water distribution system plan will be based upon the irrigation alternative(s) chosen and should consider the following.

(a) Determine structures needed to get the water from the source into the distribution system, i.e., types of turnout, well location(s), irrigation company requirements.

(b) Determine water measurement structure needs. Such as Parshall flumes, weirs, propeller meters, etc.

(c) Determine field turnout facilities. Structures, gated pipe, pipelines and valves.

(d) Costs of ditches and pipelines.

WA688.35 Tailwater reuse system are worth considering for all forms of surface irrigation and could have a significant impact on the final physical layout and water needs. Items to be considered are:

(a) Tailwater pit size;

(b) Pipeline for pumpback system or gravity flow system to lower field;

(c) Pumping plant needs; and

(d) Location of tailwater sump and other structures.

WA688.36 Farm road system.

There should be access to all parts of the irrigation distribution system for maintenance and operational ease; for planting, tillage and harvesting operation. Consider need for all-season roads.

WA688.37 Subsurface drainage systems are often needed to assure free drainage and development of adequate rooting depth. Items to be considered are:

(a) Are the areas wetland classified?

(b) Location of seeps

(c) High water table

(d) Depth of drains

(e) Necessary outlets

WA688.38 A Maintenance program is needed to assure continued operation of all physical elements as originally designed as well as RMS components that were planned for protecting the resource.

(a) Develop a program to maintain conservation practices.

(b) Develop a program to maintain physical feataues such as:

(1) For concrete-lined ditches. Remove vegetation when necessary, clean out of debris and soil from ditch, fix cracks, maintenance of berms.

(2) Pipelines. Repair leaks, see that valves and vents are operating properly.

(3) Structures and measuring devices. Maintain in working order and good repair.

(4) Sprinklers. Check for wear (gaskets, joints and nozzles).

(5) Pumps and motors. Perform periodic maintenance. Avoid shutdowns at critical times.

SUBPART D - IRRIGATION OPERATION PLAN

WA688.40 Water management.

Operating criteria for application of water under varying conditions needs to be specified and the following items considered.

(a) How fast does the soil absorb water (Intake Rates)?

(b) How much moisture is to be replaced each irrigation?

(c) The depth of a normal application.

(d) Provisions for variation in application requirements.

(e) Number of borders, furrows, sprinkler laterals, etc. and stream size per set.

(f) Irrigation frequency

(g) Guidelines for self-evaluation for the irrigator.

(h) Guidelines for maintenance.

WA688.41 Soil Intake Rates. An irrigation operation plan should identify the soils intake characteristics (I'f for surface, IPH for sprinkler) and how to operate the system for intake conditions that may be encountered during the systems operation. Some examples are:

(a) Surface irrigation. The intake rates vary drastically during the growing season. The recommended stream size for this field is based upon the average intake rate for the season, generally from the third irrigation on. Large stream sizes, for a short time period, are recommended for the prewetting and soaking of the furrows at the start of the season and after cultivations. Water should be applied in a manner that the wetting front advances one third of the way down the furrow per application until the furrow is totally wetted, i.e., water is applied until the upper one-third is wetted then removed for 24 hours. The next irrigation is applied until the center one-third is wetted and then removed. The next irrigation is applied until it wets the final one-third and then removed or cut back to the design stream size. As the irrigation season progresses, the intake rate of the soil may further diminish. To avoid excess water use, the stream size should also be reduced. Generally, the applied water should reach the end of the furrow in one-fourth of the set time. This may be accomplished by reducing the stream size or adjusting the set time.

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PART WA689 - ENERGY USE IN IRRIGATION

SUBPART A - GENERAL

WA689.10 Energy use in irrigation.

(a) The energy costs for operating an irrigation pumping plant are a major cost to Washington irrigators. Many irrigators are now selecting sprinkler systems for applying irrigation water when developing new lands, while some are reorganizing their older surface-irrigation systems by replacing them with sprinklers. Except in a few cases where gravity pressure can be provided, all these developments using sprinkler systems require a pumping plant to provide the water and the pressure for the system.

(b) There are also installations in Washington where irrigation pumping plants are used to deliver water to fields from a well, stream, irrigation canal, or surface drainage systems through surface-irrigation systems.

(c) The irrigator with the irrigation pumping plant is quite aware that energy costs have been steadily increasing over the past years and it is projected to continue. It is more important than ever for the irrigation pump and power unit to be properly matched, designed, installed and maintained to fit the irrigation conditions found on each individual field. When this occurs, the pumping plant will require a minimum amount of horsepower and thus the least amount of energy or fuel.

WA689.11 Energy source.

(a) Although electricity is the general power source in Washington, other sources exist to power a pumping plant. These include diesel, gas, propane and natural gas. Comparing energy requirement costs and availability may be one factor for determining what power unit will yield highest net returns. The irrigator with the established system can determine what his present energy requirements and costs should be and are.

SUBPART B - ENERGY REQUIREMENTS

WA689.20 Pumping plant energy requirements.

(a) There are four factors that determine the power and energy requirements of an irrigation pumping plant. They are:

(1) The quantity of water being pumped generally expressed as gallons per minute (gpm) when a pumping unit is in use.

(2) The depth from which water is lifted to the discharge side of a pump (distance between the water surface while the pump is operating, and the discharge point at the pump).

(3) The pressure at the discharge point of the pump when it is operating. This represents an accumulation of all hydraulic friction losses downstream of the pump.

(4) The efficiency of the pump expressed in percent. A pump can be designed for 75-85%, but due to wear and poor installation, the efficiency can easily be 40-50% after a few years of use.

(b) Figure WA689.20.1 shows energy requirements for an efficient irrigation pumping plant. As an example; an efficient pumping plant discharging 1000 gpm against a total lift of 300 ft should require about 86 Kw hours of electric energy. Under similar condition a diesel engine should not use more than 6.9 gallons of fuel per hour, a propane engine 11 gallons per hour, natural gas engine 114 cubic feet per hour, and a gasoline engine 8.8 gallons per hour. Table WA689.20.2 shows the performance standards for different energy sources.

(c) To make a power selection for supplying the energy for a new or modified pumping plant, four basic factors must be considered (refer to Part 690 for economic evaluation of alternatives).

(1) Initial investment cost of varuiys power units, including one time power delivery costs (such as power line and poles).

WA689.20.1

Figure WA689.20.1 - Energy Requirements for an Efficient Irrigation Pumping Plant

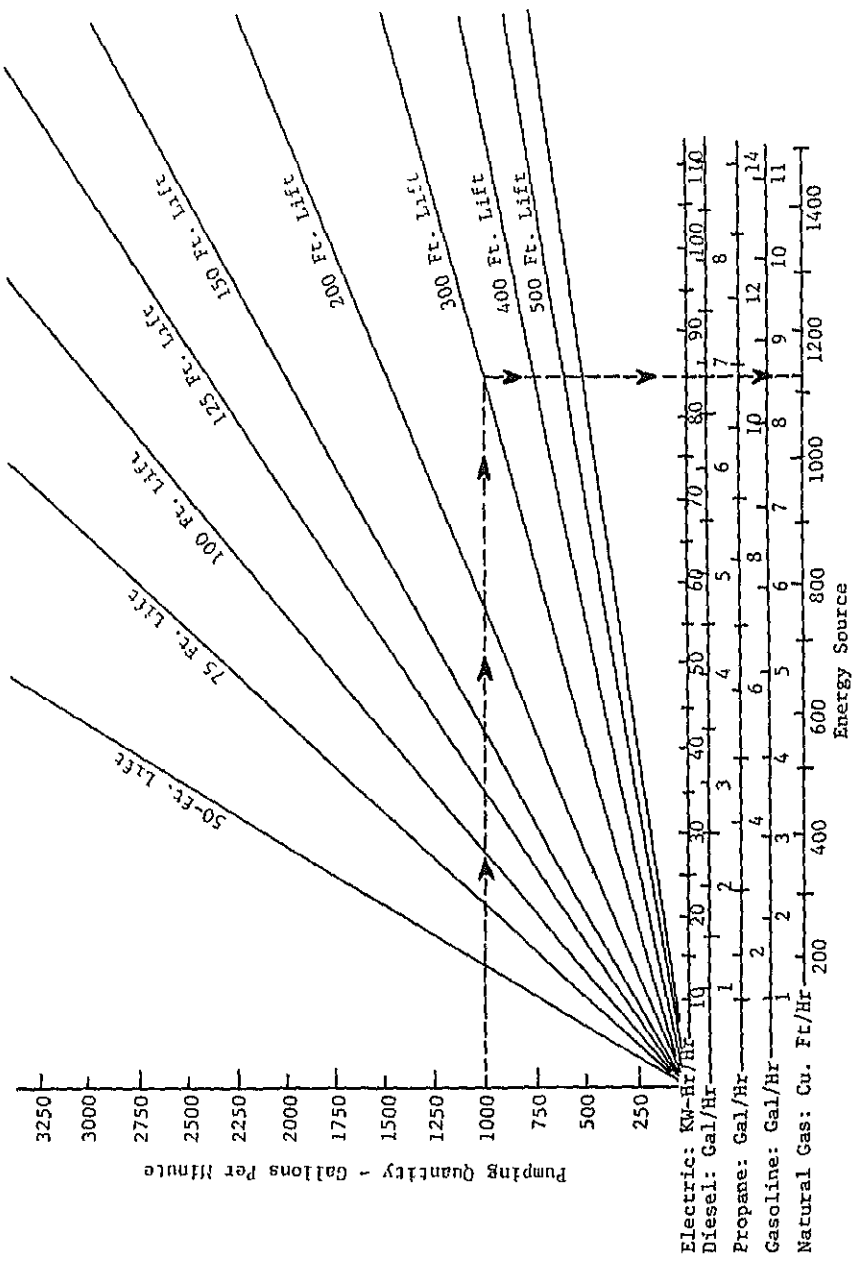


Table WA689.20.2 - Fuel Consumption--Performance Standards

Energy Source	Consumption per unit of Fuel	
	Whp-Hours	Bhp-Hours[1/]
Electric	0.9 per Kw-h	1.18 per Kw-hr
Gasoline	8.7 per gallon	11.3 per gallon
Diesel	11.0 per gallon	14.8 per gallon
Propane	6.9 per gallon	9.9 per gallon
Natural Gas	6.7 per 100 ft^3	8.5 per 100 ft^3

1/ At a reasonable operating efficiency.

Table WA689.20.3 - Equivalent Annual Cost Factor (EAE)

$$EAE = \left[\frac{(1+e)^n - (1+i)^n}{(1+e) - (1+i)}\right] * \left[\frac{i}{((1+i)^n - 1)}\right]$$

BORROWING INTEREST	NUMBER OF YEARS	POWER ESCALATION 5.00%	7.00%	9.00%	11.00%	13.00%	15.00%
7.00%	5	1.09788	1.13970	1.18311	1.22815	1.27488	1.32334
	10	1.22416	1.33069	1.44838	1.57839	1.72196	1.88046
	15	1.35331	1.53928	1.75795	2.01530	2.31836	2.67540
	20	1.48369	1.76451	2.11595	2.55701	3.11179	3.81083
9.00%	5	1.09591	1.13685	1.17934	1.22342	1.26914	1.31653
	10	1.21520	1.31715	1.42960	1.55361	1.69034	1.84106
	15	1.33140	1.50456	1.70734	1.94507	2.22402	2.55152
	20	1.44221	1.69553	2.01020	2.40238	2.89251	3.50637
10.50%	5	1.09445	1.13476	1.17658	1.21995	1.26492	1.31152
	10	1.20869	1.30733	1.41599	1.53566	1.66746	1.81258
	15	1.31580	1.47988	1.67145	1.89537	2.15739	2.46421
	20	1.41341	1.64783	1.93738	2.29632	2.74265	3.29907
12.00%	5	1.09303	1.13271	1.17387	1.21654	1.26077	1.30661
	10	1.20237	1.29780	1.40279	1.51827	1.64531	1.78503
	15	1.30091	1.45639	1.63734	1.84824	2.09431	2.38170
	20	1.38659	1.60357	1.87003	2.19856	2.60499	3.10924
15.00%	5	1.09025	1.12871	1.16858	1.20990	1.25271	1.29705
	10	1.19030	1.27962	1.37763	1.48517	1.60319	1.73269
	15	1.27331	1.41295	1.57447	1.76158	1.97865	2.23079
	20	1.33870	1.52495	1.75103	2.02669	2.36415	2.77869

WA689.20(c)(2)

(2) Energy (fuel) and lubrication costs.

(3) Maintenance and repair, including availability of service.

(4) Intangibles such as acceptable operation noise levels, convenience, power interruptions, and ease of automation.

WA689.21 Pumping costs.

With the high cost of pumping irrigation water today, especially for sprinkler irrigation, an irrigator will want to keep his system operating as efficiently as possible. Making periodic checks on electrical energy used, discharge flow and discharge pressure by the power unit can provide excellent information to the irrigator on the condition of the system. Figure WA689.21.1 shows relationship of pump efficiency vs. cost of pumping for various electrical rates. Figure WA689.20.3 shows fuel cost factors for various annual fuel cost escalation rates (7-11%). Example: At 9% annual electrical rate escalation and 10-year evaluation period, the electrical rates is projected to be 2.367 times present rates and the average cost for the 10-year period will be 1.683 times present rate.

Values for cost per acre-foot as shown in Figure WA689.21 may be estimated by:

Cost Per Acre-foot = Power Cost (¢/KwH)/Efficiency

WA689.22 Power check.

Since all electrical power is supplied through power meters, two fast estimates of seasonal power costs and pumping plant horsepower can be made.

(a) Seasonal power costs can be estimated by determining the kilowatts (Kw) being used by the system.

$$Kw = \frac{3.6 \times \text{meter disc rev.} \times \text{meter constant } (K_h) \times \text{meter multiplier}}{\text{time in seconds}}$$

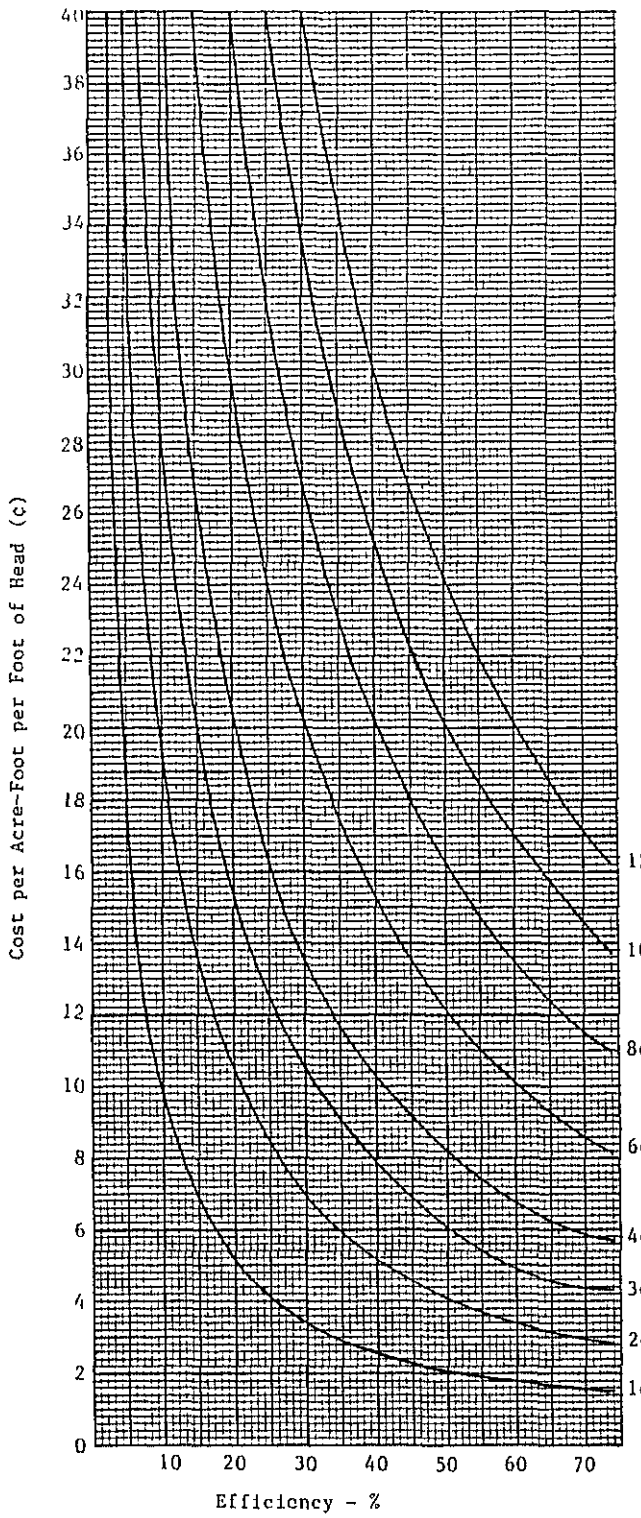
Then multiplying by the estimated hours of useage and cost per kilowatt-hour (KwH).

Seasonal Cost (Est.) = Kw x Hours of operation x Cost ($/KwH)

(b) Actual horsepower use can be calculated and used to check aginst designed horsepower to identify potential problems.

HP = Kw/0.746

Figure WA689.21.1



The Effect of Efficiency on Power Costs for Electrically-Powered Pumping Plants to Pump One Acre-Foot of Water Against One Foot of Head.

Expressed as:
Cents/Acre-Foot/Foot of Head

From: R. Longenbaugh, Assoc. Prof., Colorado State Univ., Civil Engineering Department

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PART WA690 - ECONOMIC EVALUATION

SUBPART A - GENERAL

WA690.10 Use of economics evaluation.

(a) Proper use of economic data and procedures will provide cost and return information for alternative courses of action. With good economic data, a cooperator can make an informed decision as to the resource management system that best fits his/her operation.

(b) The procedures discussed here are useful for analyzing--not only whether or not to irrigate, but as to which irrigation system should be most profitable. Dependent upon circumstances, economic detail may be carried to three levels in the decision process.

(1) Least cost irrigation system would take into consideration the capital investment, energy, and labor of the systems under consideration and equate them to annual terms.

(2) Production cost and returns would take step 1 and include additional production costs and potential yield increases.

(3) Detailed evaluation generally required on large irrigation investments would use the individuals financial situation and consider all details as to available funds, tax breaks, lease/purchase, etc. This detail is beyond normal evaluation processes and is generally left to an economist. These financial factors can have a large impact on the annual costs actually incurred for a large irrigation investment.

SUBPART B - IRRIGATION COSTS AND RETURNS

WA690.21(b)(7)

WA690.20 Least cost irrigation system.

(a) The primary purpose for estimating the total annual cost of an irrigation system is to compare the value of the expected increase or change in production from using the planned system. An economic analysis is used to determine the feasibility of installing a system or to compare the pros and cons between systems; e.g., center-pivot vs. side-wheel roll.

(b) The procedure for determining system cost to determine the total average annual ownership and operating cost of the planned system.

(c) Exhibit WA690.20.1 - Cost and Return Data Worksheet, may be used to analyze the cost of owning and operating a planned irrigation system.

WA690.21 Annual ownership and operational costs.

(a) Annual ownership cost is determined from the following data:

(1) Initial cost

(2) Life expectancy of the system components

(3) Interest rates

(4) Taxes, insurance, electrical standby rate, etc.

(b) Annual operating and maintenance cost is determined from the annual expense incurred in operating the system. They include:

(1) Fuel, oil

(2) Repair and maintenance on equipment

(3) Reservoir, pond and field maintenance

(4) Labor (Table WA684.20.2 and WA684.20.3)

(5) Irrigation water (amount used)

(6) Power for pumping

WA690.22 Production costs and yield returns.

The purpose for adding the determination of production cost and returns is to provide some idea of the capability of the proposed system to pay for itself and in some cases to see if one system generates a greater net income than others.

(a) Decision making for system selection often requires evaluation of expected yield increases and additional operation costs in addition to basic investment cost. The following are items to consider:

(1) Determine the value of increased crop production affected by the planned system.

(2) Determine the loss of income from land taken out of production due to system development; e.g., ponds, reservoirs, access roads, non-irrigated corners (pivots), etc.

(3) Increased costs in seed, fetilizer, pesticides, harvesting costs, etc. for a change in production.

(b) Exhibit WA690.20.4, when used in conjunction with Exhibit WA690.20.1, will aid in estimating net annual profit.

WA690.23 Computer and programmable calculator programs.

(a) Several programs exist that will aid in the economic evaluation of irrigation systems.

(1) Telecommunication Programs

a. AGNET

(2) PC Programs

(3) TI-59 Programs

(4) HP41 Programs

Exhibit WA690.20.1 - Cost Data Work Sheet

Cooperator_____

Acres_____ Date_____

COSTS:

Annual Ownership Costs (Fixed Costs):

_____ Interest Rate

Item	Est. Yrs. of Yrs.	Initial Cost	Amortization Factor	Annual Cost
Pipeline - Mainline	_____	$_____	_____	$_____
- Lateral	_____	_____	_____	_____
Power Unit	_____	_____	_____	_____
Pump	_____	_____	_____	_____
Well	_____	_____	_____	_____
Valves	_____	_____	_____	_____
Measuring Device	_____	_____	_____	_____
Electric Panel	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Total initial cost = $_____

Total investment - Annual Cost $_____

Other (taxes, insurance, electrical stand-by, etc.) _____

Total annual fixed costs _____

(MORE)

WA690.20.1

Exhibit WA690.20.1 - Cost Data Work Sheet
(Continued)

Annual Operational Costs:

Labor:

_____$/Hr_____Hr/Day_____Day/Yr

_____Ac x_____Hr/Acre/Irrig = _____Hr/Irrig

_____Hr/Irrig x _____No. of Irrig = _____Hr/Yr

_____Hr/Yr x $_____ cost/hr = $_____Cost/Yr

Power:

_____Hr/Season

_____Energy Req x _____Hrs/Yr = _____Total Energy

_____Total Energy x $_____Cost/Unit = $_____Cost/Yr

Other; e.g., oil for engine, motor, gear drive, etc. = $_____Cost/Yr

Total = $_____Cost/Yr

Repair and Maintenance:

_____initial cost x _____% = $_____Cost/Yr

Water:

$_____Cost/AcFt x _____Ac/Ft = $_____Cost/Yr

SUMMARY:

Annual Cost:

Fixed Costs : $_____

Operational Costs:

Labor _____
Power _____
Maintenance _____
Water _____

Table WA690.20.2 - Amortization Factors[1/]

Expected No. of Years of Life	8%	9%	10%	11%	12%	13%	14%	15%
2	.56077	.56847	.57619	.58393	.59170	.59948	.06729	.65112
4	.30910	.30867	.31547	.32233	.32923	.33619	.34320	.35027
6	.21632	.22292	.22961	.23638	.24323	.25015	.25716	.26424
8	.17401	.18067	.18744	.19432	.20130	.20839	.21557	.22285
10	.14903	.15582	.16275	.16980	.17698	.18429	.19171	.19925
12	.13270	.13965	.14676	.15403	.16144	.16899	.17667	.18448
15	.11683	.12406	.13147	.13907	.14682	.15474	.16281	.17102
20	.10185	.10955	.11746	.12558	.13388	.14235	.15099	.15976
25	.09368	.10181	.11017	.11874	.12750	.13643	.14550	.15470

1/ Amortization - method to convert costs into equal annual payments.

Suggested Amortization Periods

The period of amortization may be determined by any one of the following three factors:

1. The period of amortization should not exceed the expected life of the measure or structure.

2. If the money is borrowed to make the improvement, the length of the loan will determine the period of amortization.

3. If the producer uses own money, the real or potential alternative uses of the producer's capital will determine the period of amortization.

WA690.20.3

Table WA690.20.3 - Estimated Life Expectancy of Irrigation Systems

ITEMS	EXPECTED YEARS OF LIFE 1/
Irrigation Systems:	
Center-Pivot & Linear	12
Side-Roll	12
Hand-Move	12
Solid-Set	20
Big-Gun	12
Drip	10
Land Leveling	15 - 25
Land Smoothing	5
Irrigation Canal & Lateral (earth)	5
Irrigation Canal & Lateral (concrete)	10 - 20
Drainage Field Ditches (3' deep)	5 - 10
Irrigation Reservoir, Pond, Pit	15 - 30
Irrigation Pipelines:	
Surface - Aluminum	15
Galvanized Steel	15
Buried - Plastic	25
Asbestos-cement	25
Concrete	25
Steel	20
Pumping Power Units:	
Electric	25
Diesel	12
Gasoline	10
Natural Gas, LP	12
Well Casing	25
Pump:	
Lineshaft Propeller	10
Turbine	15
Centrifugal	12
Miscellaneous:	
Valves	12
Measuring Devices	12
Automation Equipment	12
Sprinkler Pipe Trailers	15
Fuel Tank-Gas, Diesel	18
Electrical Panel	20

1/ Estimated average life expectancy. They are averages and may change for particular situations.

(WA210-VI-WAIG, OCTOBER 1985)

Exhibit WA690.20.4 - Yield and Return
Data Work Sheet

Cooperator_____

Acres_____ Date_____

Cost:

Loss of return from land removed from production $_____ cost/year

Production Change Costs:

$_____cost/acre x _____ Ac = $_____ cost/year

System annual cost (Cost Data Work Sheet) = $_____ cost/year

Total Annual Cost = $_____ cost/year

Return:

Value of Increase in Production:

_____ yield/Ac x $_____/unit x _____Ac = $_____/year

Annual Net Return:

Annual Return $_____/year
- Annual Costs $_____/year

Net Return = $_____/year

Net Return/Ac = $_____/yr - _____Ac = $_____/yr/Ac

SUBPART C - PUMPED PIPELINE

WA690.30 Need for evaluation.

(a) The purchase and installation of an irrigation pipeline can be a very big investment for a farmer. It is an investment, the cost of which can be spread over a several-year period covering the life of the loan or the life of the pipeline and appurtenances. Yet, too often pipeline materials are purchased and installed based only on first-cost without adequate economic consideration.

(b) A good engineering design will attempt to optimize materials and power costs for the expected life of the project or loan term.

WA690.31 Methods of analysis.

(a) Two methods of analysis are discussed here to determine the most economical pipe size.

(1) The first will use the annual ownership cost plus energy costs to determine the minimum annual cost at a given flow, and;

(2) The second method is more detailed in that it uses actual cost of pumping plants, materials and present economics to determine economic pipe size by flow ranges.

(b) Example problem (a.1):

Problem: Cooperator wants to install a new pump and mainline to a center pivot. He would like to keep his installation cost down, but doesn't know if this will be the most economic way over life of pipeline. What would be most economical size to use?

Given: Pipeline length is 1320 ft from pump to field

Required to carry Q = 1000 gpm

Operating head, not including pipeline friction loss = 50 psi (115 ft)

Cooperator operates his system 2000 hrs/yr

Expected life of pipeline & term of loan = 20 yrs

Pipe dealer has given him following cost quotes for PVC IPS (Class 125) pipe, that includes installation by the dealer; 6" - $1.88/ft; 8" - $3.01/ft; 10" - $4.49/ft, & 12" - $6.14/ft.

WA690.31(b)

The power company has told him the current rate is $0.0145/KWH, but they expect an increase of 5%/yr in the future.

His banker has indicated he will be paying 12.75% interest on the loan to install pipeline.

He expects to pay about 2%/yr of the installation cost for maintenance.

Required: Using annual cost method, find most economical size.

Using energy cost vs. installation cost method, find most economical size.

Solution: Pipeline hydraulics for Q = 1000 gpm and L = 1320 ft

Pipe Size in [1]	Head Loss/100ft ft [2]	Head Loss/ 2000 ft ft	Other Head Loss ft [3]	Total Head Loss ft*	Velocity ft/sec
6	4.62	60.98	100	160.98	10.50
8	1.27	16.76	100	116.76	6.25
10	0.44	5.79	100	105.79	4.00
12	0.20	2.59	100	102.59	2.80

*Total of Head Loss/2000 ft column + Other Head Loss column.

Find fixed costs - installation and maintenance:

Pipe Size in [1]	Install. Cost/Ft $ [4]	Install. Cost Total $	Install. W/Sales Tax $ [7]	Ave.Ann. Cost $ [5]	Total W/ Annual Maint. $ [6]
6	1.88	2,481.60	2,667.72	374.10	423.93
8	3.01	3,973.20	4,271.19	598.96	678.42
10	4.49	5,926.80	6,371.31	893.46	1,012.00
12	6.14	8,104.80	8,712.66	1,221.80	1,383.90

1/ Nominal size used for calculations.
2/ Using Williams-Hazen method with C = 150.
3/ Includes pump lift, restrictions, operating head, etc.
4/ Includes cost of pipe plus cost of installation @ $0.08/Dia. in/ft
5/ Amortization over 20 years (Table WA690.21.2) at 12.75% interest (.14023)
6/ 2% of installation cost + average annual cost.
7/ 7.5% Sales Tax

Find variable cost - energy:

Pipe Size In	Total Head Loss Ft	Energy Required KWH/H 1/	Energy Cost $/Yr 2/	Average Annual Energy Cost $/Yr 3/
6	160.98	46	1334.00	1,832.80
8	116.76	32	928.00	1,274.99
10	105.79	28	812.00	1,115.61
12	102.59	27	783.00	1,075.77

Most economic size - annual cost method:

Pipe Size In	Total Fixed Annual Cost-$/Yr	Average Annual Energy Cost-$/Yr	Total* Annual Cost $/Yr	Answer:
6	381.58	1,832.80	2,214.38	[8" is
8	610.94	1,274.99	1,885.93	the most
10	911.33	1,115.61	2,026.94	economical
12	1,246.23	1,075.77	2,322.00	size.]

* Total of Total Fixed Annual Costs column + Average Annual Energy Cost column.

1/ From Figure WA689.20.1 - Energy Requirements for the Irrigation Pumping Plant.

2/ Energy Required KWH/H column (above) multiplied by $0.0145/KWH x 2000 hr/yr.

3/ Energy Cost $/yr column (above) multiplied by 1.374 (EAE from equation in Table WA689.20.3, for 5% annual energy cost increase and 12.75% interest).

(c) Example problem (a.2):

Problem: Cooperator wants to install a new mainline and pump to a center pivot. He wants to keep the initial investment cost down but is also concerned about what future power costs will do to him.

Given: Pipeline length = 1320 feet

Required Q gpm - 1000 gpm
Pressure required at system = 50 psi
Average system operation = 2000 hrs.
Expected life of the pipeline = 20 yrs.
Present Grant County Power cost average = $0.0145
Power escalation cost estimated = 5%/yr.
Cost of money (Federal Land Bank = 12.75%
on life of pipe (20 yrs.))
Average cost of maintenance estimated @ 2%/yr.
Pipe installation and glue or gasket cost = 8¢/Dia. in/ft.

Solution: The procedure is outlined in NEH-15, Chapter 11 commencing on page 11-63.

WA690.31 (d)

(d) The procedure is fairly complex and is generally performed by an economist or engineer. The final product of the procedure is presented as Figure WA690.31.3.

Briefly the procedure compares the cost difference between adjacent pipe sizes to the horsepower difference to overcome the friction loss.

The results of Table WA690.31.1 are then plotted on log-log (Figure WA690.31.3) to give an economic flow range for a specific diameter.

Table WA690.31.1 - Adjacent Pipe Sizes
(power = $0.0145/kwh, 5% escalation)

Size	1.25-1.5	1.5-2	2-2.5	2.5-3	3-4	4-5	5-6	6-8	8-10	10-12
adjacent cost	$0.68	$1.71	$2.22	$2.90	$5.46	$7.17	$8.37	$19.29	$25.27	$28.17
WHP Savings Needed	$0.012	$0.030	$0.039	$0.051	$0.096	$0.127	$0.148	$0.341	$0.446	$0.498
J ft/100 ft	0.05	0.12	0.16	0.20	0.38	0.50	0.59	1.35	1.77	1.97
GPM at J	3	6	13	24	52	139	284	624	1515	3129

By entering either the horizontal or vertical axis with the known flow (gpm) and intersecting the 45° axis, the economical pipe size can be determined.

(1) Enter the horizontal axis on Figure WA690.31.3 at 1000 gpm.

(2) Extend vertically until intercepting the 45° axis.

(3) Read 8" zone

(e) The procedure is sensitive to local power costs and power escalation rates. Local material costs can also have an impact. Table WA690.31.2 provides results for developing Figure WA690.31.4 by changing the cost to $0.14/KwH at a 9% power rate escalation figure. When determining economic pipe size with these values, note that the size is now 10 inches vs. the 8 inches previously.

Table WA690.31.2 - Adjacent Pipe Sizes
(power = $0.04/kwh, 9% escalation)

Size	1.25-1.5	1.5-2	2-2.5	2.5-3	3-4	4-5	5-6	6-8	8-10	10-12
adjacent cost	$0.68	$1.71	$2.22	$2.90	$5.46	$7.17	$8.37	$19.29	$25.27	$28.17
WHP Savings Needed	$0.004	$0.010	$0.012	$0.016	$0.031	$0.040	$0.047	$0.109	$0.142	$0.158
J ft/100 ft	0.02	0.04	0.05	0.06	0.12	0.16	0.19	0.43	0.56	0.63
GPM at J	2	3	7	13	28	75	152	334	811	1674

(f) Localized costs of materials, power costs, power escalation rates, and cost of money must be used to develop the Economic Pipe Size Selection chart. A computer program is available to develop the basic data needed as presented in Tables WA690.31.1 and 2.

(g) Care should be taken in that the economic selection may allow for velocites greater than 5 fps. For use of the economic size, a full engineering analysis should be made for surge and water hammer conditions.

Figure WA690.31.3 Economic Pipe Size Selection

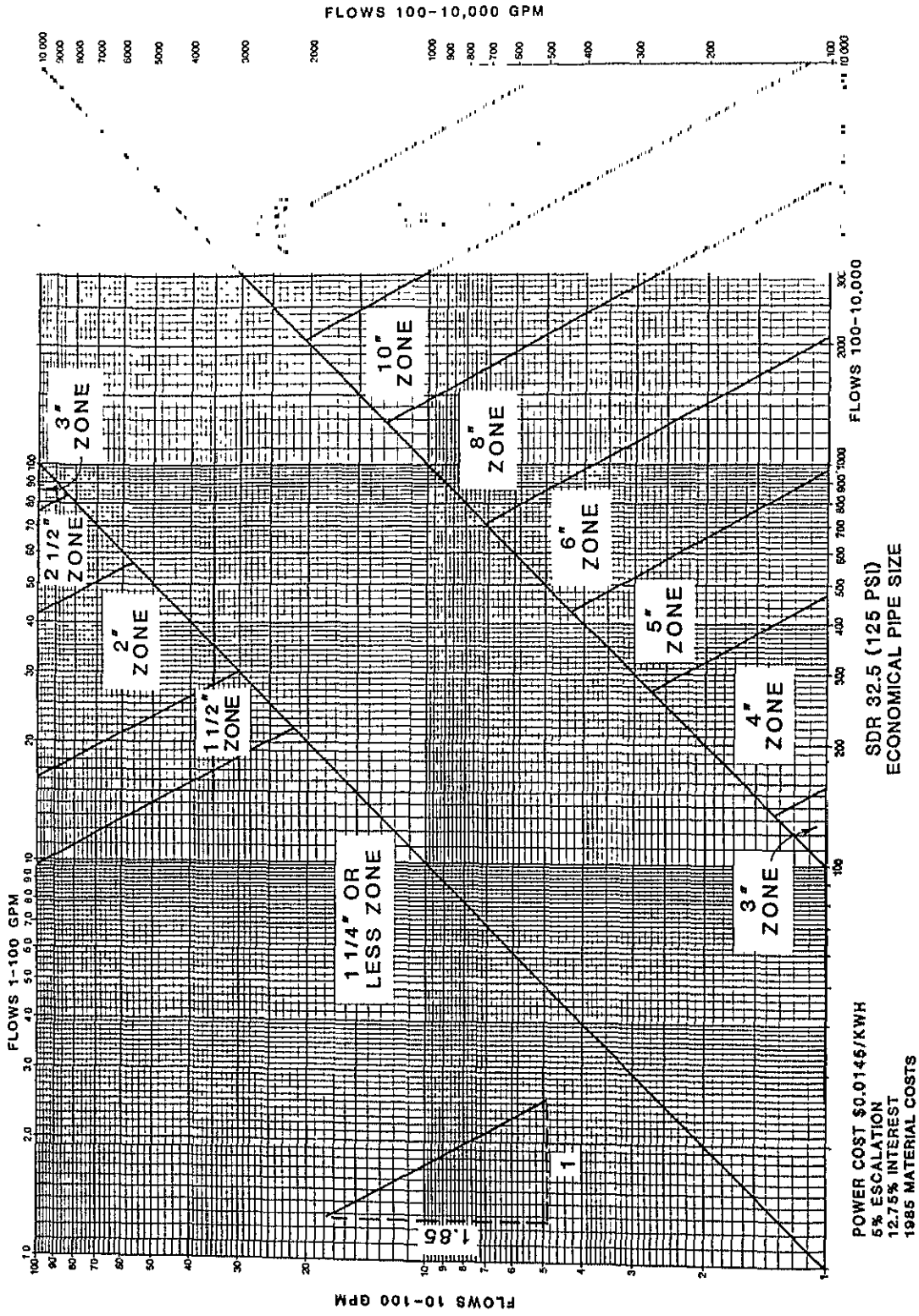


Figure WA690.31.4 - Economic Pipe Size Selection

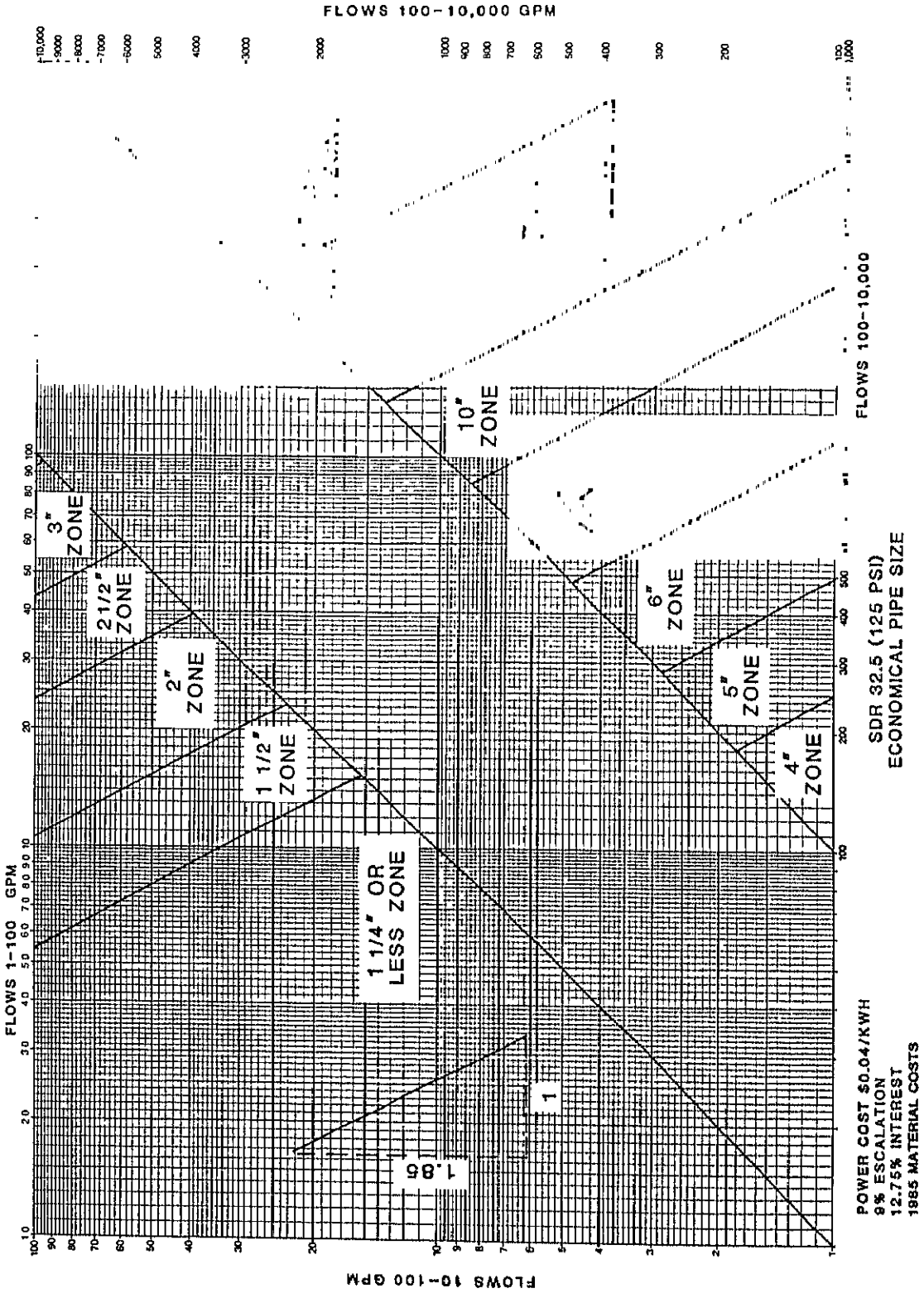


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Part WA691 - USE OF WATER SUPPLY FORECASTS

SUBPART A - GENERAL

WA691.11(b)(1)

WA691.10 Purpose of forecasts.

(a) Snow surveys and water supply forecasts provide the information from which advance estimates of available surface waters, to meet the demands of the irrigated area, are made. Chief use of water supply forecasts in agriculture is to adjust demands to the available water supply.

(b) Water supply forecasts are very well suited to areas with and without stored water supply. These allow farmers to plan when and how to use the projected quantity of water that will be available for their use. It is a matter of determining whether;

(1) the irrigated acreage should be cut back;

(2) to extend the limited water supply over all the acreage, thereby reducing the number of irrigations and reducing yields (planned deficit irrigation);

(3) to postpone the seeding of more land;

(4) to irrigate best or highest productive fields;

(5) to improve delivery system; and/or

(6) to supplement supply with wells.

WA691.11 Planning principles.

(a) Generally, more efficient use of stored water is achieved by using an adequate supply of water on a limited acreage than by spreading a short water supply over all available acreage.

(b) If water supply is expected to be less than normal:

(1) Perennial hay crops should be allotted a reasonable amount of water early in the season to produce a good first cutting.

WA691.11(b)(2)

(2) Priority in the use of water should go to the best fields and especially those most efficiently irrigated.

(3) The farmer must decide, in line with economic benefits and management problems, the proportion of acreage in high water-using and more profitable crops in relation to the low water-using crops and fallow.

(4) Special attention should be given to improving the efficiency of the irrigation system and the distribution system as well.

(5) Consideration should be given to seasonal needs and growth characteristics of plants in relation to water availability.

(6) Livestock numbers may need to be reduced in anticipation of feed shortages.

(c) If water supply is expected to exceed the normal demand:

(1) Over-irrigation and waste should be avoided.

(2) More heavy water-using crops may be planted.

(3) Leaching of salts from the soil may be accomplished.

(4) Water can remain in storage for use in succeeding years. Cooperative agreements for carry-over storage should be worked out among the water users.

(5) Apply deep, late-season irrigations to utilize the storage capacity of the soil.

WA691.12 Forecast data.

(a) In the water supply forecast bulletins published by the Soil Conservation Service, the stream flow forecast is stated in terms of the number of acre-feet that will flow past an established stream gaging station during a designated interval--such as April to July 30. This is followed by a statement that gives the forecast in terms of the percent of normal. The various state and federal agencies in the western states have designated the 20-year average as the base period or normal. Every five years, the average is updated. In 1987 a 25-year average will be used and by 1992 a 30-year average will be used.

(b) Low-flow forecasts are made which predict levels and date of the levels of the stream in relation to water rights on that steam. This indicates how long water will last and adequacy of late-season supply, if any is available.

SUBPART B - USE OF FORECAST DATA

WA691.20 Water requirements versus available supply.

(a) The Estimated Monthly Normal Consumptive Use and Net Irrigation Water Requirement charts were developed for each crop in the areas served by this guide. The data includes effective precipitation, crop use length of growing season, etc.

(b) The following example illustrates how this data may be used with cooperators in conjunction with water supply forecasts. Assume that a farm contains 160 irrigated acres. The estimated irrigation water requirements by months for crops grown in the area are shown. Losses in water transmission and application may add 50 percent or more to these irrigation requirements, depending upon the efficiencies of the irrigation methods and farm distribution systems.

(c) The estimated water requirements for the various crops in a particular climatic area may be as follows:

Crop	Total Growing Season Water Requirements (Inches)	Average Effective Rainfall During Growing Season (Inches)	Net Irrigation Water Required (Inches)
Alfalfa Hay	35.04	3.08	31.96
Improved Pasture	30.99	3.08	27.91
Spring Grain	20.28	2.76	17.52
Silage Corn	25.26	2.25	23.01
Alfalfa Seed	29.27	3.11	26.16

(d) An example of normal crop plantings on this farm are as follows:

Crop	Acres	Net Irrigation Water Required (Inches)	Total Net Requirements (Ac-Ft)	Field Efficiency (%)	Gross Field Application (Ac-Ft)	Gross* Farm Application (Ac-Ft)
Alfalfa Hay	60	31.96	159.8	60	266.3	279.6
Improved Pasture	40	27.91	93.0	50	188.0	195.3
Spring Grain	20	17.52	29.2	50	58.4	61.3
Silage Corn	20	23.01	38.4	60	64.0	67.2
Alfalfa Seed	20	26.16	43.6	50	87.2	91.6
TOTALS	160				661.9	695.0

* This on-farm transmission system water losses were estimated at 5%. The actual farm transmission losses may vary.

(e) If the forecast and records of the irrigation company indicate that 695 acre-feet can be delivered as required throughout the growing season, adequate water is assured for all crops. If a lesser amount of water is predicted, the farmer will have to make some adjustments as to the most economical acreage to apply the available water.

(f) Reference should be made to cost and return information for various crops to help determine highest returns. Use information developed locally or in similar areas, and revised to fit particular situations.

(g) Assume that the allotment of water will be 460 acre-feet that can be delivered to the farm throughout the growing season instead of the 695 acre-feet normally required. If five percent loss in the farm distribution system is estimated, the amount of irrigation water available for the various crop fields will be 437 acre-feet. The farmer has several alternatives in determining the cropping pattern and must select those that will fit the particular situations. Examples of these alternatives follow:

(1) Fully irrigate normal acreage of alfalfa hay, and the balance on fully-irrigated pasture to the extent water is available:

Crop	Acres	Total Net Requirements (Ac-Ft)	Field Efficiency (%)	Gross Field Application (Ac-Ft)
Alfalfa Hay	60	159.8	60	266.3
Pasture	37	85.4	50	170.7
Idle	64	0	0	0
TOTALS	160			437.0

(2) Another alternative is to fully irrigate the normal acreage of spring grain, pasture, alfalfa seed, and irrigate alfalfa hay for the first two cuttings only:

Crop	Acres	Net Irrigation Water Required (Inches)	Total Net Requirements (Ac-Ft)	Field Efficiency (%)	Gross Field Application (Ac-Ft)
Alfalfa Hay (Jan-July)	60	19.88 1/	99.4	60	165.7
Pasture	26	27.91	60.5	50	121.0
Grain	20	17.52	29.2	50	58.4
Alfalfa Seed	20	16.16	43.6	50	87.2
Idle	34	0	0	0	0
TOTALS	160				432.3

1/ determine accumulated net irrigation water requirement from monthly data, part 683.

(3) Assume, as is quite often the case, that the irrigation water will be available only during the early months of the growing season due to a lack of suitable storage. For these conditions, an alternative use of the irrigation water would be as follows: Irrigate alfalfa hay for the first two cuttings; irrigate the pasture during April through July, and use the balance of the water on spring grain.

Crop	Acres	Net Irrigation Water Required (Inches)	Total Net Requirements (Ac-Ft)	Field Efficiency (%)	Gross Field Application (Ac-Ft)
Alfalfa Hay (2nd cutting)	60	19.88 1/	99.4	60	165.7
Pasture (April-July)	40	16.86 1/	56.2	50	112.4
Grain	54	17.52	78.8	50	157.7
Idle	6	0	0	0	0
TOTALS	160				435.8

1/ Determine accumulated net irrigation water requirement from monthly data Part 683.

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PART WA692 - SPECIAL USE TABLE, TOOLS, AIDS AND REFERENCES

SUBPART A - GENERAL

WA692.10 General.

An attempt has been made to include commonly-used aids, tools, charts and tables that were not included in the major parts of the Guide, but do provide use. Exhibits can be added in the future as they are developed.

WA692.10.1

Table WA692.10.1
CONVERSION TABLE

UNITS		ACCEPTED VALUE		ACTUAL VALUE
Acre (ac.)	=	43560	Square Feet (sq. ft.)	
Bar	=	1	Atmospheres (Atm)	0.9869
Bar	=	1000	Milibar	
Bar	=	14.5	Pounds per Sq. Inch (psi)	
CFS/day	=	2	Acre Feet	1.9835
CFS/day	=	1	Acre Inch	0.9917
CFS/day	=	1	Second Foot (SF)	
Cubic Feet per Second (CFS)	=	450	Gallons per Minute (gpm)	448.8312
Cubic Foot (cu. ft.)	=	7.5	Gallons (gal.)	7.4805
Cubic Foot (cu. ft.)	=	28.32	Litters (L)	
Cubic Foot (cu. ft.)		62.4	Pounds (lbs.)	
Foot per Second (fps)	=	0.682	Miles per Hour (mph)	
Foot (ft.)	=	30.48	Centimeters (cm)	
Foot (ft.)	=	0.433	Pounds per Sq. Inch (psi)	
Gallon (gal.)	=	0.134	Cubic Feet (cu. ft.)	
Gallon (gal.)	=	231	Cubic Inches (cu. in.)	
Gallon (gal.)	=	3.785	Liters (L)	
Hectare	=	2.5	Acres (ac.)	2.471
Horse Power (hp)	=	0.746	Kilowatts (kw)	0.7457
Kilogram (kg)	=	2.7	Pounds (lbs.)	2.6792
Kilometer (km)	=	0.62	Miles (mi.)	0.62137
Kilowatt (kw)	=	1.34	Horse Power (hp)	1.341
Liter per Second (lps)	=	0.035	Cubic Feet per Second (CFS)	0.03532
Liter (L)	=	0.26	Gallons (gal.)	0.26418
Meter (M)	=	3.3	Feet (ft)	3.28084
Meter (M)	=	39.37	Inches (in.)	
Miles per Hour (mph)	=	88	Feet per Second (fps)	
Mile (mi.)	=	5280	Feet (ft.)	
Mile (mi.)	=	1.6	Kilometer (km)	1.60934
Milibar	=	2.1	Pounds per Sq. Foot (psf)	2.08854
Millibar	=	0.0145	Pounds per Sq. Inch (psi)	
Pound per Sq. Inch (psi)	=	2.31	Feet (ft.)	
Pounds per Sq. Inch (spi)	=	0.068	Atmospheres (atm)	0.068046
Pounds per Sq. Inch (psi)	=	0.069	Bars	0.068948
Square Mile (sq. mi.)	=	640	Acre (ac.)	

SUBPART B - EXHIBITS

WA692.20 Exhibits.

Some of the following exhibits are reduced in size. If you want a full-size copy, please notify the engineering staff secretary for a standard copy.

Exhibit WA692.21 - Irrigation Management Worksheet

GENERAL INFORMATION

Irrigator's Name_____

Crops Irrigated_____

Acres Irrigated_____

Water Supply:

Intermittent - amount_____

schedule_____

Continuous - amount_____

SOILS

Soil Series_____

Type of Profile_____

Basic Intake Rate_____ in/hr

Root Zone Managed_____ in

Available Moisture Per Inch Root Zone_____ in

TAM (Total Available Moisture) in Root Zone_____

_____

_____ in

TAM in Top 1/4 of Root Zone_____ in

IRRIGATION APPLICATION

Net Applicateion = $\frac{(\text{TAM in Top 1/4 of Root Zone})}{.4} - {}^{*}C$

Net Application_____

* If the root zone is 24 in. or less, C = 1/2 inch
If the root zone is greater than 24 in, C = 1 inch

Gross Application = $\frac{\text{Net Application}}{\text{System Efficiency}}$

Gross Application = _____ in

CUR, Peak Consumptive Use Rate of Crop_____ in/day

Application Rate = _____ in/hr

Duration Per Irrigation - Time of Set = _____ hrs

Exhibit WA692.21 continued

IRRIGATION NEEDS

MONTH	MONTHLY IRRIGATION REQUIREMENTS (INCHES)	NET APPLICATION PER IRRIGATION (INCHES)	AVERAGE NUMBER OF IRRIGATIONS NEEDED

NOTE: The average number of irrigations indicated in the above table is only a guide. Actual needs may vary according to local climate and soil characteristics.

To more accurately determine the irrigation needs, one of the moisture monitoring methods listed below should be employed:

1. Feel and appearance method. Testing soil moisture by hands-on sampling of soil.
2. Evaporation-pan method. Monitoring evaporation and rainfall in relation to crop consumptive use.
3. Aquatron. A portable probe which indicates soil moisture levels.
4. Tensiometers. Semi-permanent probes set in the ground which indicate soil moisture levels.
5. Neutron Probe. A nuclear device which measures soil moisture levels at permanent stations set in the ground.

FOR MORE INFORMATION ABOUT THE ABOVE METHODS OF MOISTURE MONITORING, CONTACT THE LOCAL SOIL CONSERVATION SERVICE OFFICE.

Exhibit WA692.22 - Soil, Water and Plant Resource Data for Use in Designing and/or Evaluating Conservation Irrigation System

Cooperator_____ Conservation District_____ Community_____

Crop_____ Field Number_____ Date_____

Field Office_____ SCS Technician_____

Field(s)_____ Acres_____

Soil, Water and Plant Resource Data for Use in Designing and/or Evaluating Conservation Irrigation Systems

---

SOIL

Mapping Unit (design soil)_____ Intake Family_____ in/hr

Slope_____% Erodibility_____ (wind); _____ (water)

Salinity_____ Alkalinity_____

WATER-HOLDING CAPACITY (WHC)

Depth Inches		Texture	WHC ins/in	Total WHC
From	To			

WATER

Source(s)_____ Quantity_____ cfs; _____ gpm

PLANTS

Crop (design)_____ Effective Root Zone_____ ft

Critical Growth Period_____

Total Water-Holding Capacity in the Root Zone_____

PEAK AVERAGE DAILY CONSUMPTIVE USE BY MONTH (inches/day)

Crop	March	April	May	June	July	August	September	October

WA692.22

Exhibit WA692.22 continued

IRRIGATION WATER MANAGEMENT

	Present	Planned
A Total Acres	Ac	Ac
B Percent (%) of Water Used Between Irrigation	%	%
C Irrigation Efficiency (%)	%	%
D Total Net Moisture Replacement Needs (in)1/	in	in
E Total Gross Water to Apply (in)2/	in	in
F Time of Irrigation (hrs)3/	hrs	hrs
G Irrigation Frequency (days)4/		

March	April	May	June	July	August	September	October

1/ Total WHC x B x A = _____acre inches net

2/ $\frac{D}{C}$ = _____acre inches gross

3/ E divided by water delivery (cfs) = _____hrs of application

4/ $\frac{\text{Net moisture replacement/Ac}}{\text{Consumptive Use}}$ = _____interval in days

Comments

_____

_____

_____

_____

IRRIGATION WATER MANAGEMENT - After Planned System is Installed

$$\frac{D}{Q \text{ (cfs)} \times \text{Actual Irrigation Time}} \times 100\% = \text{Efficiency}$$

Comments

_____

_____

_____

Exhibit WA692.23 -Sprinkler-Irrigation Water Management Scheduling Guide (Worksheet)

Cooperator_____ Conservation District_____ Community_____

Crop_____ Field Number_____ Date_____

Field Office_____ SCS Technician_____

SOIL CHARACTERISTICS

Type(s)_____ Effective Depth_____in or ft

Available Water (Holding) Capacity (AWC)

_____Ft.Depth = _____ in/ft

_____Ft.Depth = _____ in/ft

_____Ft.Depth = _____ in/ft

_____Ft.Depth = _____ in/ft

Total AWC = _____ Inches

Soil Intake Rate = _____ in/hr

CROP OR FORAGE DATA

Type_____ Crop Rooting Zone Depth _____ft

* CONSUMPTIVE USE BY MONTHS

Month	Plant Root Zone Depth	% Tot. AWC at Which To Replace Moisture	Est.Consumptive Use Daily-in	Monthly-in	Est.Irrigation Frequency-days
	Ft.				
April					
May					
June					
July					
August					
September					
October					

*Note: Check soil moisture at 1/3 root zone depth of key plant.

IRRIGATION SYSTEM INFORMATION

Type_____ Application Efficiency of System _____%

Net Application: (AWC x % Moisture to Replace) _____ x _____% = _____in

Gross Application: $\left(\frac{\text{Net Application}}{\%\ \text{Efficiency}}\right)$ _____in / % = _____ inches

Nozzle Size _____ Model_____Pressure_____psi

Spacing_____Precipitation Rate_____in/hr

Recommended hours per set:_____hrs Application for Set_____ in

Exhibit WA692.24
IRRIGATION WATER MANAGEMENT PLAN

OBJECTIVE

To effectively utilize the available irrigation water supply in managing and controlling the moisture environment of crops to promote the desired crop response, to minimize soil erosion and loss of plant nutrients, to control undesirable water loss and to protect water quality.

Farmer_____ Acres_____

Type of System_____ Crop_____
(basin, slope, sprinkler or drip)

Water Source _____
(project wells, direct diversion, etc.)

Available Water Supply _____ in/acre/annum _____gpm

_____ in/acre/annum during peak use period

Annual Consumptive Use	- CU	(+)_____	inches
Leaching Need	- LN	(+)_____	inches
Other Needs, if any	- ON	(+)_____	inches
Effective Rainfall	- ER	(-)_____	inches
Irrigation Requirement (CU+LN+ON-ER)		_____	inches
Planned Application Efficiency		_____	%
Gross Irrigation Application Needed		_____	inches

Field Erosion Control: Application rates will be held below quantities that cause significant soil movement in the field and in no case allow significant quantities of soil material to leave the field.

The suggested irrigation rate and schedule for attaining irrigation water management is as follows:

Field Number or Numbers_____

Irrigation Soil Group _____

(OVER)

WA692.24
Exhibit WA692.24 continued

SUGGESTED SCHEDULE

Month	Carryover Soil Moisture (in)	Monthly Net Irrig. Req. (in)	Irrigation Application (in)	Number of Irrigations	Total Irrigation Application
Mar					
Apr					
May					
Jun					
Jul					
Aug					
Sep					
Oct					
Nov					
TOTAL					

Exhibit WA692.25 - Table of Precipitation - Inches Per Hour

Spacing	Gallons Per Minute From Each Sprinkler														
	2	3	4	5	6	7	8	9	10	11	12	15	18	20	25
20 x 20	.48	.73													
20 x 30	.32	.48	.65	.80											
20 x 40	.24	.36	.48	.60	.73										
30 x 30	.21	.32	.43	.54	.65										
30 x 40	.16	.24	.32	.40	.48	.52	.64	.72	.81						
30 x 50		.19	.25	.32	.38	.44	.51	.57	.64	.70	.76				
30 x 60		.16	.22	.27	.32	.37	.43	.48	.53	.58	.64	.80			
40 x 40		.18	.24	.30	.36	.42	.48	.54							
40 x 50			.19	.24	.29	.33	.38	.43	.48	.53	.58				
40 x 60			.16	.20	.24	.28	.32	.36	.40	.44	.48	.60	.72	.80	
50 x 50					.23	.27	.31	.35							
50 x 60					.19	.22	.26	.29	.32	.35	.39	.48	.58	.64	
50 x 70						.19	.22	.25	.28	.30	.33	.41	.49	.55	.69
60 x 60							.21	.24	.27	.29	.32	.40	.48	.53	.67
60 x 70								.20	.23	.25	.27	.34	.41	.46	.57
60 x 80									.20	.22	.24	.30	.36	.40	.50

WA692.26

Exhibit WA692.26 - Gross Irrigation Application

Net Irrig. Depth (inches)	Gross Irrigation Depth for Design Efficiency					
	80	75	70	65	60	55
1.6	2.00	2.13	2.28	2.46	2.67	2.91
1.8	2.25	2.40	2.57	2.77	3.00	3.27
2.0	2.50	2.66	2.86	3.08	3.33	3.64
2.2	2.75	2.93	3.14	3.39	3.67	4.00
2.4	3.00	3.20	3.43	3.70	4.00	4.37
2.6	3.25	3.46	3.71	4.01	4.33	4.73
2.8	3.50	3.73	4.00	4.32	4.67	5.09
3.0	3.75	4.00	4.28	4.63	5.00	5.45
3.2	4.00	4.26	4.57	4.93	5.33	5.82
3.4	4.25	4.53	4.86	5.24	5.67	6.18
3.6	4.50	4.79	5.14	5.55	6.00	6.55
3.8	4.75	5.06	5.43	5.86	6.33	6.91
4.0	5.00	5.33	5.71	6.17	6.67	7.28
4.2	5.25	5.60	6.00	6.47	7.00	7.64
4.4	5.50	5.86	6.28	6.78	7.33	8.00
4.6	5.75	6.12	6.57	7.09	7.67	8.36
4.8	6.00	6.39	6.86	7.40	8.00	8.73
5.0	6.25	6.65	7.14	7.71	8.33	9.10
5.2	6.50	6.92	7.43	8.02	8.67	9.46
5.4	6.75	7.18	7.71	8.33	9.00	9.82
5.6	7.00	7.45	8.00	8.63	9.33	10.18

Exhibit WA692.27 - Friction Loss in Feet per 100 Feet in Lateral Lines of Portable Aluminum Pipe with Couplings

(Based on Scobey's formula and 30-foot pipe lengths) 1/

Flow	2-inch 2/ K_S = .34	3-inch 2/ K_S = .33	4-inch 2/ K_S = .32	5-inch 2/ K_S = .32	6-inch 2/ K_S = .32
(gpm)					
100	25.4	3.20	0.739	0.244	0.099
120		4.54	1.04	.339	.140
140		6.09	1.40	.454	.188
160		7.85	1.80	.590	.242
180		9.82	2.26	.733	.302
200		12.0	2.76	.896	.370
220		14.4	3.30	1.07	.443
240		16.9	3.90	1.26	.522
260		19.7	4.54	1.47	.608
280		22.8	5.22	1.70	.700
300		25.9	5.96	1.93	.798
320		29.3	6.74	2.18	.904
340		32.8	7.56	2.45	1.02
360		36.6	8.40	2.74	1.13
380		40.6	9.36	3.03	1.26
400		44.7	10.3	3.34	1.38
420			11.3	3.66	1.51
440			12.3	4.00	1.66
460			13.4	4.35	1.80
480			14.6	4.72	1.95
500			15.8	5.10	2.12
550			18.9	6.12	2.52
600			22.2	7.22	2.98
650			25.9	8.40	3.46
700			29.8	9.68	3.99
750			33.8	11.0	4.54
800				12.5	5.15
850				14.0	5.78
900				15.6	6.44

1/ For 20-foot pipe lengths, increase values in the table by 7.0 percent. For 40-foot lengths, decrease values by 3.0 percent.

2/ Outside diameter.

WA692.28

Exhibit WA692.28 - Center-Pivot Irrigation Systems

% of Water Applied in Last 100 Feet 1/	Total System Length (In Feet) 2/	Total Area Square Field Twice Length of System (in Acres)	Area Covered in Acres 3/	
			With Gun Sprinkler Used Only In Corners	With Gun Sprinkler Used on Entire Circle
36.0	500	23.0	22.0	26.0
33.1	550	27.8	26.2	30.5
30.6	600	33.1	30.8	35.3
28.4	650	38.8	36.0	40.6
26.5	700	45.0	41.3	46.1
24.8	750	51.8	47.2	52.1
23.4	800	58.8	53.3	58.4
22.1	850	66.3	59.8	65.0
21.0	900	74.5	66.7	72.2
20.0	950	82.9	74.0	79.5
19.0	1000	91.8	81.7	87.4
18.1	1050	101.3	89.5	95.3
17.3	1100	111.0	98.0	104.0
16.6	1150	121.3	106.6	112.6
16.0	1200	132.2	115.7	121.9
15.4	1250	143.3	123.8	130.0
14.8	1300	155.0	134.0	141.3
14.3	1350	167.3	145.0	151.6
13.8	1400	179.8	155.2	162.0
13.3	1450	193.0	166.5	173.2
12.9	1500	206.0	177.7	184.7

1/ Less volume of end gun when used.
2/ Generally outside drive wheel approximately 50 feet from end.
3/ Based on 100-foot gun coverage.

EXAMPLE

System is 900 feet long. Then 21 percent of water is applied in last 100 feet. 66.7 acres are covered with gun used in corners only.

Exhibit WA692.29

AVERAGE PEAK DAILY CONSUMPTIVE USE

CU Inch/Day	gpm/acre 1/					
	E = 100%	E = 90%	E = 80%	E = 70%	E = 60%	E = 50%
0.14	2.6	2.9	3.3	3.8	4.4	5.2
0.16	3.0	3.3	3.8	4.3	5.0	6.0
0.18	3.4	3.8	4.2	4.8	5.6	6.8
0.20	3.8	4.2	4.7	5.4	6.2	7.5
0.22	4.1	4.6	5.2	5.9	6.9	8.2
0.24	4.5	5.0	5.6	6.4	7.5	9.0
0.26	4.9	5.4	6.1	7.0	8.1	9.8
0.28	5.2	5.8	6.6	7.5	8.8	10.5
0.30	5.6	6.2	7.0	8.0	9.4	11.2
0.32	6.0	6.7	7.5	8.6	10.0	12.0
0.34	6.4	7.1	8.0	9.1	10.6	12.8
0.36	6.8	7.5	8.4	9.6	11.2	13.5

1/ Formula: $Q \times T = D \times A \quad Q = \left(\frac{CU \times 1ac}{24\ hr}\right)\left(\frac{450gpm}{cfs}\right)\left(\frac{1}{E}\right) = gpm/ac$

Exhibit WA692.30

IMPACT-TYPE SPRINKLER HEAD

PRESSURE	5/32"	11/64"	3/16"	13/64"	7/32"	15/64"	1/4"	17/64"	NOTE
30 psi	3.9	4.7	5.6	6.5	7.6	8.7	9.5	10.4	Flow - gpm
	90 74	92 75	95 72	98 73	100 74	102 76	110 77	112 ---	Diam - Reg w/vane Diam - CDS
40 psi	4.5	5.4	6.4	7.6	8.9	10.0	10.9	12.0	Flow - gpm
	94 78	94 79	101 75	105 76	106 78	109 79	118 80	120 ---	Diam - Reg w/vane Diam - CDS
50 psi	5.0	6.1	7.2	8.6	9.9	11.1	12.3	13.4	Flow - gpm
	98 80	100 82	106 78	107 79	110 80	113 82	124 83	130 ---	Diam - Reg w/vane Diam - CDS
60 psi	5.5	6.6	7.9	9.2	10.6	12.1	13.4	15.0	Flow - gpm
	101	108	109	110	114	117	129	140	Diam - Reg w/vane
70 psi	5.9	7.1	8.5	10.0	11.4	13.2	15.0	16.0	Flow - gpm
	103	106	111	114	118	130	134	150	Diam - Reg w/vane

Exhibit WA692.31

IRRIGATION MANAGEMENT RECORD

Year_____

Field_____ Crop _____ Readily Available Moisture Capacity_____inches

Date	Action	Available Moisture Withdrawn (inches)	Readily Available Moisture Remaining (inches)	Daily Cons. Use in/day	Date of Next Irrig.	Available Moisture To Be Replaced (inches)	Total Irrigation Water Applied (inches)	Irrigation Efficiency (percent)	*Net Water Applied
						TOTAL			

Crop Yield_____

NOTES:

*Net water applied cannot exceed available moisture to be replaced.

Exhibit WA692.32

SOIL MOISTURE ESTIMATE WORK SHEET

NAME _____ YEAR _____

FIELD _____ ACRES _____

SOIL TYPE _____

CROP _____ CROP ROOT DEPTH _____ FT.

AVERAGE AVAILABLE WATER-HOLDING CAPACITY OF SOILS

Soil Texture	Available Moisture	
	Range	Average
	In./ft.	In./ft.
Very coarse textured sands and fine sands	0.5 - 1.0	0.75
Coarse textured loamy sands and loamy fine sands	0.75 - 1.25	1.0
Moderately coarse textured sandy loams and fine sandy loams	1.25 - 1.75	1.50
Medium textured very fine sandy loams, loam, and silt loams	1.5 - 2.3	2.0
Moderately fine textured sandy clay loams, clay loams and silty clay loams	1.75 - 2.5	2.2
Fine textured sandy clays, silty clays and clay	1.6 - 2.5	2.3

				MOISTURE ESTIMATES MADE							
				Date_____		Date_____		Date_____		Date_____	
Depth	Available Water Capacity	Allowable Moisture Depletion		Available Moisture Withdrawn (SMD)*		Available Moisture Withdrawn (SMD)*		Available Moisture Withdrawn (SMD)*		Available Moisture Withdrawn (SMD)*	
Inches	Inches	%	Inches	%	Inches	%	Inches	%	Inches	%	Inches
0 - 12											
12 - 24											
24 - 36											
36 - 48											
48 - 60											
60 - 72											
TOTAL											

* (SMD) - Soil Moisture Deficiency

NOTES:

Exhibit WA692.33 - Pumping Plant Evaluation/Electric Power Worksheet

Landowner_____ Date_____

SWCD_____ Field Office_____ Field No._____

Technician(s)_____

Make of Motor_____ HP Rating_____ RPM_____

Electricity Consumption

(1) $\frac{(3.6)\ (\quad \text{Kh Factor})\ (\quad \text{Revolutions})\ (\quad \text{Multiplier})}{\quad \text{Seconds in Time}}$ = _____KWH/hr

NOTE: The Kh Factor and the Multiplier are found on the face of the meter. In the abasence of a multiplier on the meter, it is considered as 1.

Pump Efficiency

(2) Well Yeild = (gpm) (60) = _____gal/hr

(3) $\frac{\text{gal/hr \#2}}{\text{KWH/hr \#1}}$ = _____gal/KWH

(4) Total Pumping Lift- _____ft

(5) Discharge Head (psi x 2.31)- - - - - - - - - - - - - - - - _____ft

(6) Column Pipe Loss - _____ft

(7) Total Dynamic Head - T.D.H. (#4 + #5 + #6)- - - - - - - - - - _____ft

(8) Output Horsepower = $\frac{(\quad \text{TDH \#7})\ (\quad \text{gpm \#2})}{3960}$ = _____ H.P. out

(9) Input Horsepower =(KWH/hr #1)(1.34 HP/KW) = _____ H.P. in

(10) Overall Efficiency (O.E.) = $\frac{(\quad \text{H.P.out \#8})\ (100)}{\text{H.P. in \#9}}$ = _____ %

(11) Pump Efficiency = $\frac{(\quad \text{O.E. \#10})\ (100)}{\text{Motor Efficiency } 1/}$ = _____%

(12) St.O.E. = (0.75) (motor efficiency - decimal) (100) = _____%

(13) Percent of Standard Efficiency = $\frac{\text{O.E. \#10 x 100}}{\text{St.O.E. \#12}}$ = _____%

Costs for Irrigation

(14) Acre-Inches/hr pumped = $\frac{\text{gpm \#2}}{450}$ = _____Acre-Inch/hr

(15) Energy Cost/hr = (KWH/hr #1) (Cost/KWH)[2/]= $_____/hr

1/ Standard Electric Motor Efficiencies

Submersible		Vertical Hollow Shaft	V-Belt Drive (Motor Only)
3-phase motors	80%	10 - 100 H.P. - 90%	10 - 40 H.P. - 88%
Single phase motors	75%	100 - 150 H.P. - 91%	40 - 125 H.P. - 89%
		150 - 300 H.P. - 92%	125 - 130 H.P. - 92%

Determine a Standard Overall Efficiency (St.O.E.) using a standard national pump efficiency of 75% and the motor efficiency used in #11.

2/ Power demand charge must be included, either to increase unit cost or however utility charges.

WA692.33

Exhibit WA692.33 continued

(16) Energy Cost/Ac-In = $\frac{\text{Cost/hr \#15}}{\text{Ac-In/hr \#14}}$ = $\$$_____/Ac-In

(17) Cost/Irrigation = (_____ Cost/Ac-In #16) (_____Applied___) = $\$$_____/Acre

(18) Estimated Annual Energy Cost = (___Cost/hr #15)(____Annual hrs pumped)
= $\$$_____/Yr

Exhibit WA692.34 -

SOIL INTAKE RATE TEST
SET-TYPE SPRINKLER SYSTEMS

Date _____

Farm _____ Soil Type _____

Location _____ Crop _____

Sprinkler Type _____ Nozzle Size _____ Pressure _____

Test Start _____ Test End _____ Test Time _____ min _____ hr

Can Row No.	Distance From Sprinkler	Catch Can Data					App Rate	Intake Rate Observations (15 minute intervals)		
		Row 1	Row 2	Row 3	Total	Average		under	adequate	Over
	ft	ml	ml	ml	ml	ml/in	in/hr	1 2	3 4	5 6
1	5									
2	10									
3	15									
4	20									
5	25									
6	30									
7	35									
8	40									
9	45									
10	50									
11	55									
12	60									
13	65									
14	70									

Remarks: _____

NOTE: Attach percent soil moisture and bulk density worksheet.

Test Made By: _____

WA692.35

Exhibit WA692.35 -

GENERAL RANGE OF AVAILABLE MOISTURE HOLDING CAPACITIES
AND AVERAGE DESIGN VALUES FOR NORMAL SOIL CONDITIONS

SOIL TEXTURE	AVAILABLE MOISTURE (Range - inches/ft.)
Very Coarse Texture	0.40 to 0.75
Coarse Texture	0.75 to 1.00
Moderately Coarse Texture	1.00 to 1.50
Medium Texture	1.50 to 2.30
Moderately Fine Texture	1.75 to 2.50
Fine Texture	1.60 to 2.50

To Figure the Amount of Water Needed to
Refill the Soil to its Moisture Holding Capacity

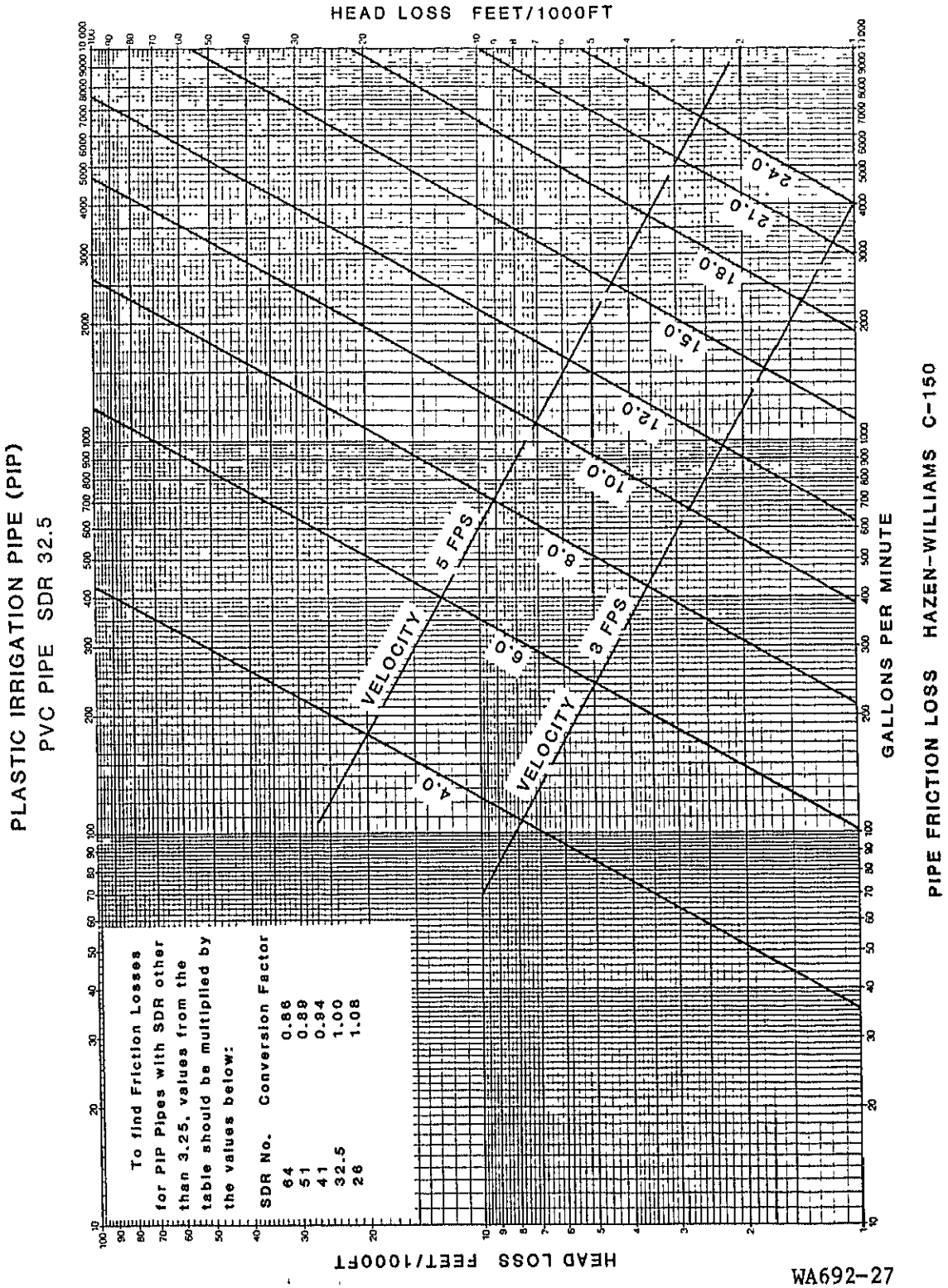
Depth in Feet		Available Moisture Capacity	Soil Moisture Before Irrigation		Moisture to be Replaced
	Soil Texture	Inches	%	In.	Inches
0-1					
1-2					
2-3					
3-4					
4-5					
5-6					
6-7					
Total Moisture to be Replaced 100% Efficiency					

Exhibit WA692.36

PLASTIC PIPE SIZES
Plastic Irrigation Pipe (PIP) and Iron Pipe Size (IPS)

nominal size	PIP od	IPS od	PIP id's by SDR 64	51	41	32.5	26	IPS id's by SDR 64	41	32.5	26	21	13.5
0.5		0.84											0.716
0.75		1.05										0.950	0.894
1		1.315										1.190	1.120
1.25		1.66								1.558	1.532	1.502	1.414
1.5		1.9								1.783	1.754	1.719	1.619
2		2.375								2.229	2.192	2.149	2.023
2.5		2.875								2.698	2.654	2.601	2.449
3		3.5							3.329	3.285	3.231	3.167	2.981
4	4.13	4.5	4.001	3.968	3.929	3.876	3.812	4.359	4.280	4.223	4.154	4.071	3.833
5		5.563						5.389	5.292	5.221	5.135	5.033	
6	6.14	6.625	5.948	5.899	5.840	5.762	5.668	6.418	6.302	6.217	6.115	5.994	
8	8.16	8.625	7.905	7.840	7.762	7.658	7.532	8.355	8.204	8.094	7.962	7.804	
10	10.2	10.75	9.881	9.800	9.702	9.572	9.415	10.414	10.226	10.088	9.923		
12	12.24	12.75	11.858	11.760	11.643	11.487	11.298	12.352	12.128	11.965	11.769		
15	15.3		14.822	14.700	14.554	14.358	14.123						
18	18.701		18.117	17.968	17.789	17.550	17.262						
21	22.047		21.358	21.182	20.972	20.690	20.351						
24	24.803		24.028	23.830	23.593	23.277	22.895						

Figure WA692.37
Plastic Pipe (PIP) Friction Loss



WA692-27

(WA210-VI-WAIG, OCTOBER 1985)

WA692.38

Exhibit WA692.38
Plastic Pipe (IPS) Friction Loss

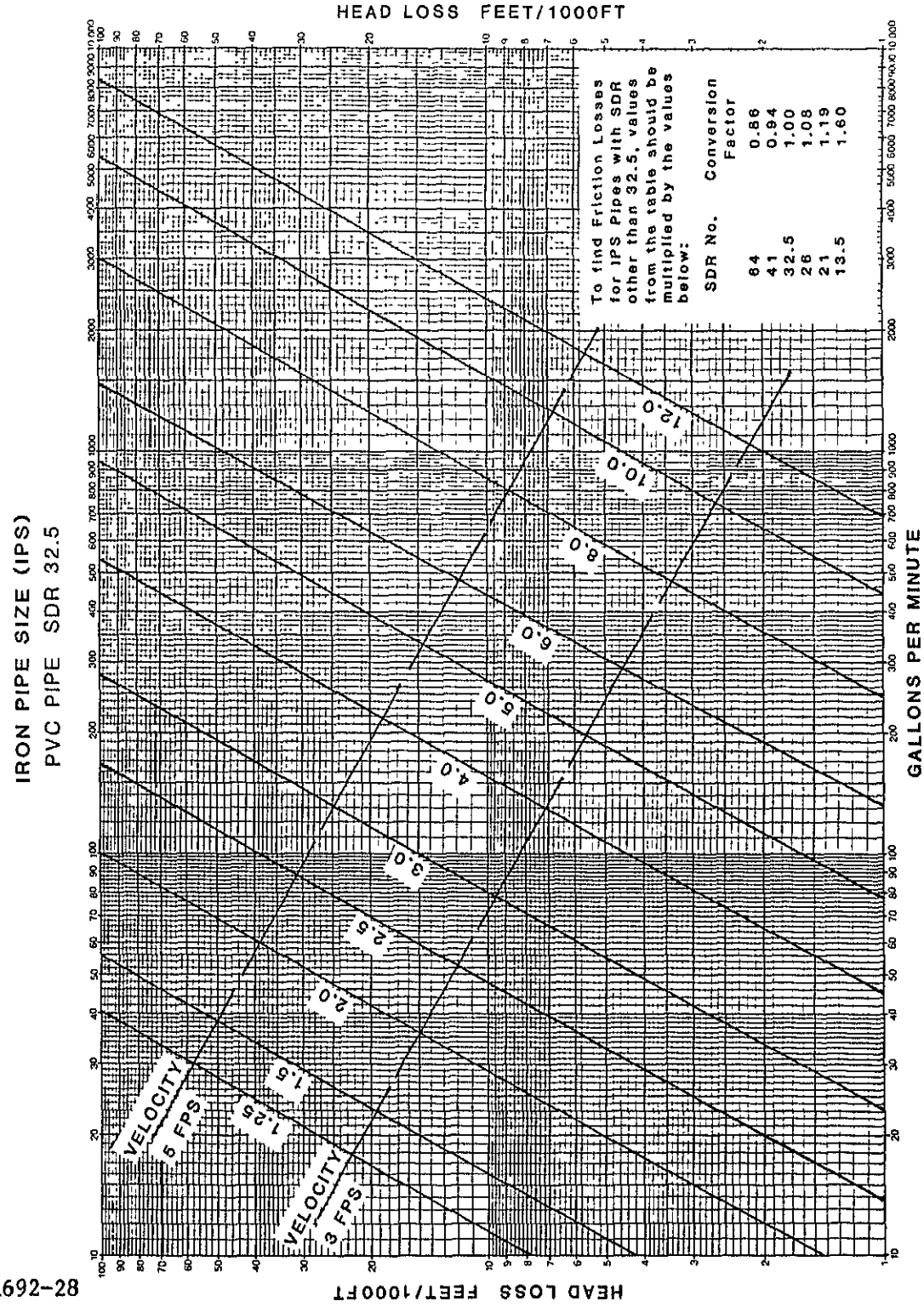


Exhibit WA692.39
Montana Wash Tub Evaporation Plan

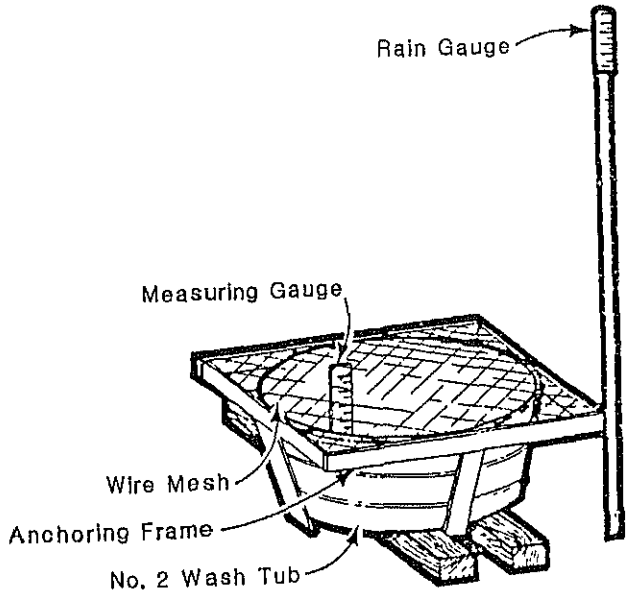
NEEDED MATERIALS:

Quantity	Item
1	No. 1 or No. 2 Wash tub (approximately 20 inches wi and 10 inches deep)
2	30" long - 2" x 4"
4	18" long - 1" x 2" or 1" x 4" Sharpened Stakes
1	Approximately 20" x 20" - 1" Chicken Wire Frame
1	Measuring Stick (ruler, yardstick or meter stick)
1	Rain Gage and Support Post
1	Carpenter's Level

INSTALLATION:

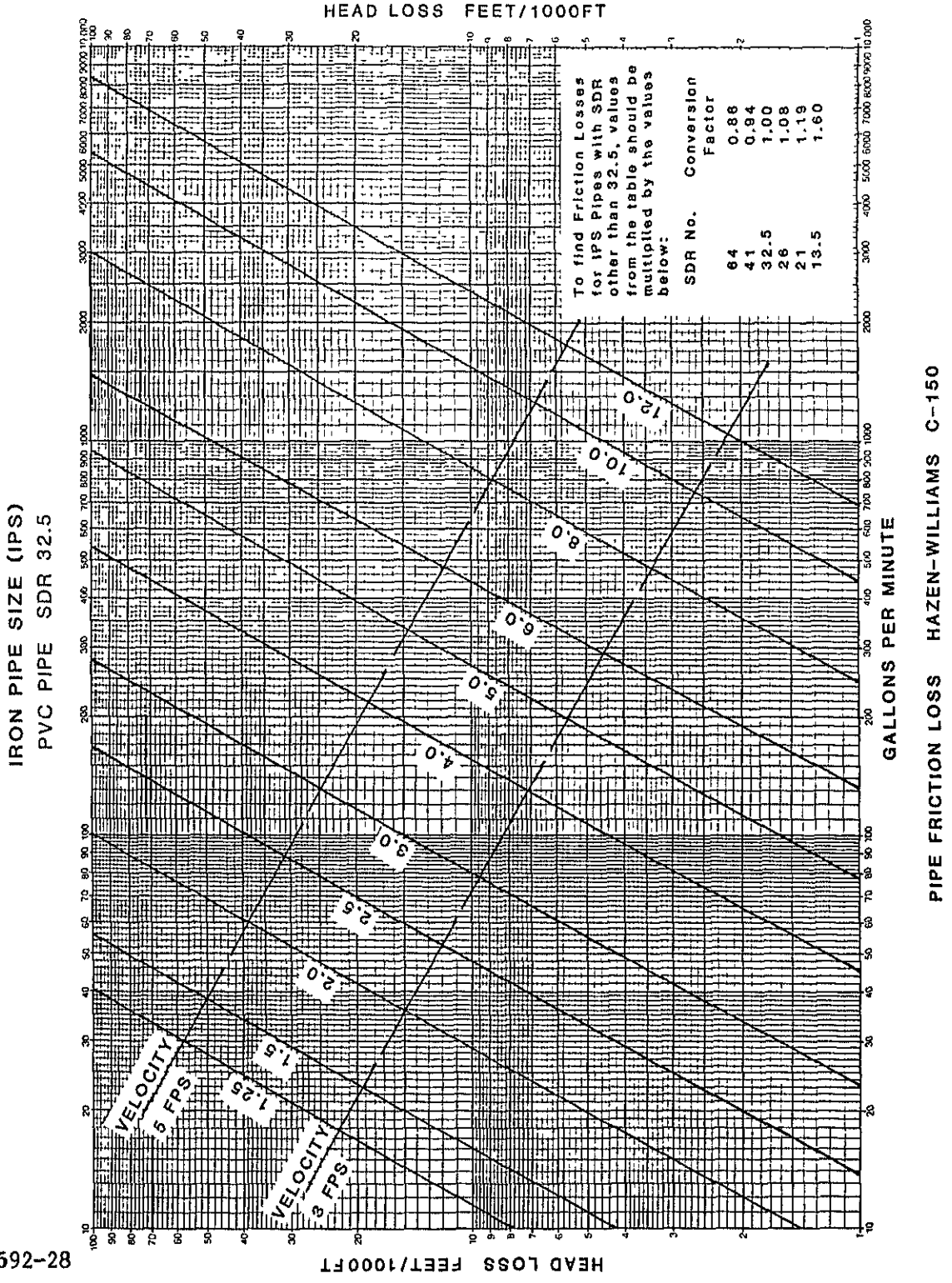
1. Prelevel the site to the extent possible.
2. Place the two 2 x 4's and verify levelness in all directions. Secure w driven stakes nailed to each end, reverify levelness.
3. Permanently mark the tub at 5" and 8" depths.
4. Place the tub on the 2 x 4 blocks.
5. Place the chicken wire frame over the tub (this keeps animals and birds of the water).
6. Install the rain gage and support pole next to the tub.

NOTE: It may be desirable to further secure the tub to the ground if it m be disturbed or located in a high wind area. Figure 1 shows a typical fie installation.



WA692.38

Exhibit WA692.38
Plastic Pipe (IPS) Friction Loss



(WA210-VI-WAIG, OCTOBER 1985)

Exhibit WA692.39
Montana Wash Tub Evaporation Plan

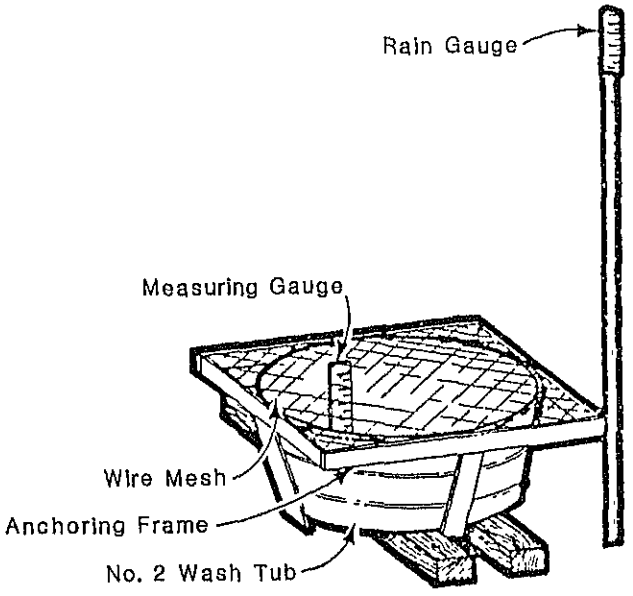
NEEDED MATERIALS:

Quantity	Item
1	No. 1 or No. 2 Wash tub (approximately 20 inches wide and 10 inches deep)
2	30" long - 2" x 4"
4	18" long - 1" x 2" or 1" x 4" Sharpened Stakes
1	Approximately 20" x 20" - 1" Chicken Wire Frame
1	Measuring Stick (ruler, yardstick or meter stick)
1	Rain Gage and Support Post
1	Carpenter's Level

INSTALLATION:

1. Prelevel the site to the extent possible.
2. Place the two 2 x 4's and verify levelness in all directions. Secure with driven stakes nailed to each end, reverify levelness.
3. Permanently mark the tub at 5" and 8" depths.
4. Place the tub on the 2 x 4 blocks.
5. Place the chicken wire frame over the tub (this keeps animals and birds out of the water).
6. Install the rain gage and support pole next to the tub.

NOTE: It may be desirable to further secure the tub to the ground if it may be disturbed or located in a high wind area. Figure 1 shows a typical field installation.



WA692.39

PROCEDURE:

1. Seed the rain gage with 1/8 inch of water and 3/8 inch of mineral oil (used to prevent evaporation).

2. Fill the tub to the the eight inch mark.

3. Daily measure the depth in the tub and record with the rain gage reading on Figure WA692.40. This reading should be made at near the same time daily and in the same location of the tube.

4. Refill the tub at each irrigation to the eight inch mark or when the depth reaches the five inch mark. Record refilling on Figure WA692.40.

5. When emptying the rain gage, repeat step 1.

6. When the computed crop use accumulates to the soil allowable deficit or irrigation system replacement capability, it's time to irrigate.

7. A scheduling sheet should be kept for each crop due to the difference in evaporation pan crop coefficients. (These coefficients are available at all Washington Soil Conservation Service and Extension Service offices.)

PRECAUTIONS:

The tub should be placed in or near an irrigated field. The tub should not be placed on bare ground or next to a gravel or blacktop road. The tub should not be placed under trees or near buildings. Plants growing within a 30 foot radius of the tub should be kept mowed (not sprayed with herbicide).

Tubs located in dryland corners or dryland areas must be corrected to reflect irrigated area evaporation. The readings, under these conditions, should be modified by multiplying by 0.65. When placed in irrigated areas, this correction is not needed.

Irrigations should be planned before the available soil water reaches zero. The worksheet should be adjusted periodically with actual soil moisture measurement.

Figure WA692.40
WORKSHEET FOR DETERMINING AVAILABLE SOIL MOISTURE

SITE LOCATION:______________________ SOIL TYPE:______________________

CROP:______________________ MAX. ROOTING DEPTH:______________(ft.)

TOTAL AVAILABLE WATER (root zone):__________(in.) ALLOWABLE DEPLETION:________MAD%________(IN.)

COL. 1	COL. 2	COL. 3	COL. 4	COL. 5	COL. 6	COL. 7	COL. 8	COL. 9	COL. 10	
DATE	RAIN GAGE READING	NET RAIN GAGE	NET EFFECT. RAIN (1)	PAN WATER LEVEL	NET CHANGE OF PAN (2)	CROP COEFF. (3)	AVE. DAILY CROP USE (4)	AVAIL. SOIL WATER (5)	ADJUST. SOIL WATER (6)	NOTES

(1) Effective rain is taken as .75 of actual to reflect evaporation losses.
(2) Net change is the change from the prior reading times 0.65 for dryland conditions plus the effective rain in column 4.
(3) The average monthly crop coefficient (modify by multipling by 1.1 for hot spells or light frequent applications.
(4) Column 6 X Column 7
(5) Previous value of Column 9 - Column 8
(6) Column 9 + Effective Rain (Column 4)

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
adkins	vfsl	S	14	5.0	0-1	0.15	(.30)	(.35)	0.49	5	4.80
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
adkins	fsl	S	20	5.0	0-1	0.15	0.40	(.50)	0.32	5	2.05
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
adkins (alk)	fsl	W,S	19	4.5	0-1	0.15	(.40)	(.50)	0.32	4	2.56
					1-2	0.15					
					2-3	0.15					
					3-4	0.14					
					4-5	0.13					
adkins	lfs	S	20	5.0	0-1	0.13	(.50)	(.60)	0.32	5	2.05
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
aeneas	fsl	---	18	5.0	0-1	0.13	().5)	(.80)	0.32	3	3.41
					1-2	0.12					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
aeneas	sl	---	26	5.0	0-1	0.12	().5)	(.80)	0.24	3	1.92
					1-2	0.12					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
agnew	sil	W	24	5.0	0-1	0.19	(.10)	(.20)	0.37	5	2.74
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
ahtanum	sil	W,S	6	2.0	0-1 1-2	0.15 0.15	(.30)	(.35)	0.49	2	12.01
alderdale	lfs	---	10	2.5	0-1 1-2 2-2.5	0.08 0.05 0.04	(1.)	(1.0)	0.32	2	5.12
anders	sil	---	6	2.0	0-1 1-2	0.18 0.18	(.25)	(.30)	0.43	2	9.25
anglen	sil	W	14	5.0	0-1 1-2 2-3 3-4 4-5	0.20 0.18 0.18 0.18 0.18	(.25)	(.30)	0.43	5	3.70
antilon	gr-sl	W,S	30	5.0	0-1 1-2 2-3 3-4 4-5	0.16 0.13 0.16 0.17 0.17	(.35)	(.40)	0.15	5	0.45
arta	sil	W	30	5.0	0-1 1-2 2-3 3-4 4-5	0.22 0.20 0.20 0.19 0.19	(.30)	(.35)	0.28	5	1.57
ashue	l	---	6	5.0	0-1 1-2 2-3 3-4 4-5	0.15 0.05 0.04 0.02 0.02	0.36	0.35	0.37	2	6.85
ashue	gr-l	---	22	5.0	0-1 1-2 2-3 3-4 4-5	0.12 0.05 0.04 0.02 0.02	0.36	(.35)	0.24	2	2.88

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
bagdad	sil	S	14	5.0	0-1	0.20	(.25)	(.30)	0.43	5	3.70
					1-2	0.20					
					2-3	0.20					
					3-4	0.19					
					4-5	0.19					
barneston	gr-sil & l	---	14	5.0	0-1	0.16	(.35)	(.40)	0.20	1	4.00
					1-2	0.08					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
barneston	grv-l & sl	---	18	5.0	0-1	0.12	().8)	(.80)	0.15	1	2.25
					1-2	0.08					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
barneston	gr-sl & cosl	---	18	5.0	0-1	0.15	().8)	(.80)	0.15	1	2.25
					1-2	0.08					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
barnhardt	gr-l	---	28	5.0	0-1	0.16	(.40)	(.50)	0.24	5	1.15
					1-2	0.12					
					2-3	0.12					
					3-4	0.10					
					4-5	0.07					
bear prairie	cb-sil	---	30	5.0	0-1	0.19	(.30)	(.35)	0.20	5	0.80
					1-2	0.19					
					2-3	0.20					
					3-4	0.20					
					4-5	0.18					
beckley	cosl	---	26	5.0	0-1	0.13	().5)	(.80)	0.24	3	1.92
					1-2	0.09					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
belfast (prot.)	sil, l	---	22	5.0	0-1	0.21	(.30)	(.35)	0.32	5	2.05
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					

es	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
e	sil	---	22	5.0	0-1 1-2 2-3 3-4 4-5	0.17 0.17 0.17 0.17 0.17	(.30)	(.35)	0.37	5	2.74
ingham (dr.)	sil	W	24	5.0	0-1 1-2 2-3 3-4 4-5	0.25 0.17 0.17 0.17 0.17	(.15)	(.25)	0.32	5	2.05
ingham (dr.)	cl & sicl	W	32	5.0	0-1 1-2 2-3 3-4 4-5	0.25 0.17 0.17 0.17 0.17	(.15)	(.25)	0.28	5	1.57
e	sil	---	6	5.0	0-1 1-2 2-3 3-4 4-5	0.20 0.11 0.04 0.03 0.03	(.25)	(.30)	0.43	2	9.25
lay	sil	S	16	4.0	0-1 1-2 2-3 3-4	0.20 0.17 0.16 0.15	(.15)	(.25)	0.37	3	4.56
rly	fsl,sl	---	12	5.0	0-1 1-2 2-3 3-4 4-5	0.10 0.08 0.05 0.05 0.05	(.40)	(.50)	0.32	2	5.12
rly	lfs	---	10	5.0	0-1 1-2 2-3 3-4 4-5	0.09 0.08 0.05 0.05 0.05	(.5)	(.80)	0.32	2	5.12
rly	gr&cb-fsl	---	26	5.0	0-1 1-2 2-3 3-4 4-5	0.11 0.08 0.05 0.05 0.05	(.8)	(.80)	0.15	2	1.13

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
beverly (var.)	sl,fsl	---	20	5.0	0-1	0.11	(.40)	(.50)	0.32	5	2.05
					1-2	0.11					
					2-3	0.11					
					3-4	0.05					
					4-5	0.05					
birchbay	sil	---	14	5.0	0-1	0.32	(.30)	(.35)	0.32	2	5.12
					1-2	0.25					
					2-3	0.04					
					3-4	0.10					
					4-5	0.17					
bisbee	lfs	---	18	5.0	0-1	0.10	().5)	(.80)	0.32	5	2.05
					1-2	0.10					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					
bisbee (var.)	sl,fsl	---	26	5.0	0-1	0.08	()1.)	(1.0)	0.28	5	1.57
					1-2	0.09					
					2-3	0.07					
					3-4	0.06					
					4-5	0.06					
bjork	sil	---	6	2.0	0-1	0.18	(.25)	(.30)	0.43	2	9.25
					1-2	0.17					
blockhouse	sil	W	24	5.0	0-1	0.20	(.15)	(.25)	0.37	5	2.74
					1-2	0.19					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
blueslide	sil	W	16	5.0	0-1	0.20	(.15)	(.25)	0.43	5	3.70
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
boesel	fsl,l	W	12	5.0	0-1	0.16	(.40)	(.50)	0.32	2	5.12
					1-2	0.14					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
boesel (var.)	sil	---	16	5.0	0-1	0.18	(.15)	(.25)	0.43	5	3.70
					1-2	0.18					
					2-3	0.17					
					3-4	0.15					
					4-5	0.15					
bong	fsl, sl, cosl	---	18	5.0	0-1	0.13	().5)	(.80)	0.32	3	3.41
					1-2	0.12					
					2-3	0.06					
					3-4	0.05					
					4-5	0.05					
bong	ls	---	26	5.0	0-1	0.08	()1.)	(1.0)	0.24	3	1.92
					1-2	0.12					
					2-3	0.06					
					3-4	0.05					
					4-5	0.05					
bonner	gr-sl	---	30	5.0	0-1	0.15	(.35)	(.40)	0.15	3	0.75
					1-2	0.16					
					2-3	0.07					
					3-4	0.04					
					4-5	0.04					
bonner	gr-sil	---	28	5.0	0-1	0.16	(.40)	(.50)	0.24	3	1.92
					1-2	0.16					
					2-3	0.07					
					3-4	0.04					
					4-5	0.04					
bonner	sil, l	---	22	5.0	0-1	0.18	(.30)	(.35)	0.32	3	3.41
					1-2	0.16					
					2-3	0.07					
					3-4	0.04					
					4-5	0.04					
bow	gr-l & sil	W	30	5.0	0-1	0.16	(.35)	(.40)	0.20	5	0.80
					1-2	0.17					
					2-3	0.19					
					3-4	0.17					
					4-5	0.17					
bow	l, sil	W	24	5.0	0-1	0.18	(.15)	(.25)	0.32	5	2.05
					1-2	0.17					
					2-3	0.19					
					3-4	0.17					
					4-5	0.17					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
bow	sicl	W	30	5.0	0-1	0.16	(.30)	(.35)	0.24	5	1.15
					1-2	0.17					
					2-3	0.19					
					3-4	0.17					
					4-5	0.17					
brickmill	gr-l	W,S	14	5.0	0-1	0.11	(.30)	(.35)	0.28	2	3.92
					1-2	0.06					
					2-3	0.06					
					3-4	0.04					
					4-5	0.02					
brief	sl	S	30	5.0	0-1	0.11	(.35)	(.40)	0.20	5	0.80
					1-2	0.09					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
brief	gr-sl	S	30	5.0	0-1	0.07	(.35)	(.40)	0.15	5	0.45
					1-2	0.07					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
briscot	sil,l	W	22	5.0	0-1	0.20	(.30)	(.35)	0.32	5	2.05
					1-2	0.16					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
briscot	fsl	W	20	5.0	0-1	0.15	(.40)	(.50)	0.32	5	2.05
					1-2	0.16					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
buckley (dr.)	sil, l	---	14	3.0	0-1	0.21	(.30)	(.35)	0.32	2	5.12
					1-2	0.14					
					2-3	0.13					
burbank	ls,lfs	S	10	5.0	0-1	0.09	().5)	1.00	0.24	2	2.88
					1-2	0.07					
					2-3	0.04					
					3-4	0.02					
					4-5	0.02					

.es	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
)ank *	fs	S	26	5.0	0-1 1-2 2-3 3-4 4-5	0.11 0.21 0.17 0.02 0.02	().8)	(.80)	0.17	2	1.45
:h	l	---	22	5.0	0-1 1-2 2-3 3-4 4-5	0.18 0.18 0.18 0.18 0.18	(.25)	(.30)	0.37	5	2.74
:h	fsl	---	28	5.0	0-1 1-2 2-3 3-4 4-5	0.17 0.18 0.18 0.18 0.18	(.40)	(.50)	0.28	5	1.57
ke	sil	S	6	2.0	0-1 1-2	0.20 0.20	0.23	0.30	0.43	2	9.25
ke *	vfsl	S	6	2.0	0-1 1-2	0.27 0.27	0.17	(.30)	0.49	2	12.01

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
cagey	ls	W	26	5.0	0-1	0.08	(>1.)	(1.0)	0.10	5	0.20
					1-2	0.07					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
caldwell (dr.)	sil	---	24	5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
calouse	sil	S	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.20					
					2-3	0.18					
					3-4	0.15					
					4-5	0.15					
caples	sil	W	24	5.0	0-1	0.20	(.15)	(.25)	0.37	5	2.74
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
caples	sicl	W	24	5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
carlsborg	gr-sl	---	26	5.0	0-1	0.07	(>1.)	(1.0)	0.15	5	0.45
					1-2	0.03					
					2-3	0.02					
					3-4	0.02					
					4-5	0.02					
carlsborg	gr-ls	---	26	5.0	0-1	0.04	(>1.)	(1.0)	0.10	5	0.20
					1-2	0.03					
					2-3	0.02					
					3-4	0.02					
					4-5	0.02					
carstairs	grv-sl	---	26	5.0	0-1	0.07	(>1.)	(1.0)	0.10	2	0.50
					1-2	0.05					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					

eries	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
:arstairs	grv-l,gr-l	---	26	5.0	0-1	0.08	()1.)	(1.0)	0.10	2	0.50
					1-2	0.05					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
casey	sil, l	W	6	5.0	0-1	0.17	(.30)	(.35)	0.43	3	6.16
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
casey	fsl	W	14	5.0	0-1	0.15	(.30)	(.35)	0.37	3	4.56
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
casey	sicl	W	22	5.0	0-1	0.15	(.30)	(.35)	0.32	3	3.41
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
cashmere	co-sl,sl	S	18	5.0	0-1	0.14	().5)	(.80)	0.32	4	2.56
					1-2	0.13					
					2-3	0.13					
					3-4	0.11					
					4-5	0.07					
cashmere	fsl	S	22	5.0	0-1	0.15	(.30)	(.35)	0.37	4	3.42
					1-2	0.13					
					2-3	0.13					
					3-4	0.11					
					4-5	0.07					
cashmere(sub.)	fsl	S	14	5.0	0-1	0.15	(.30)	(.35)	0.37	3	4.56
					1-2	0.13					
					2-3	0.13					
					3-4	0.11					
					4-5	0.07					
cashmont	sl,fsl	---	26	5.0	0-1	0.12	().8)	(.80)	0.20	5	0.80
					1-2	0.11					
					2-3	0.10					
					3-4	0.10					
					4-5	0.08					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
cashmont	gr-sl	---	26	5.0	0-1	0.10	().8)	(.80)	0.15	5	0.45
					1-2	0.11					
					2-3	0.10					
					3-4	0.10					
					4-5	0.08					
cashmont(var.)	fsl	---	28	5.0	0-1	0.14	(.40)	(.50)	0.28	5	1.57
					1-2	0.13					
					2-3	0.08					
					3-4	0.08					
					4-5	0.08					
cassolary	sl,fsl	W	28	5.0	0-1	0.15	(.40)	(.50)	0.24	5	1.15
					1-2	0.15					
					2-3	0.16					
					3-4	0.16					
					4-5	0.10					
cathcart	l, sil	---	28	5.0	0-1	0.16	(.40)	(.50)	0.28	5	1.57
					1-2	0.12					
					2-3	0.13					
					3-4	0.13					
					4-5	0.13					
cathcart (var.)	fsl	---	28	5.0	0-1	0.14	(.40)	(.50)	0.24	3	1.92
					1-2	0.14					
					2-3	0.14					
					3-4	0.12					
					4-5	0.11					
cathlamet	sil	---	30	5.0	0-1	0.22	(.30)	(.35)	0.28	5	1.57
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
cedonia	sil	S	14	5.0	0-1	0.20	(.25)	(.30)	0.43	5	3.70
					1-2	0.20					
					2-3	0.20					
					3-4	0.18					
					4-5	0.18					
centralia	sil, l	---	22	5.0	0-1	0.20	(.30)	(.35)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
centralia (var.)	l	---	28	5.0	0-1	0.15	(.40)	(.50)	0.28	5	1.57
					1-2	0.13					
					2-3	0.13					
					3-4	0.13					
					4-5	0.13					
chanokane	l, sl	W,S	21	5.0	0-1	0.16	(.30)	(.35)	0.32	5	2.05
					1-2	0.16					
					2-3	0.06					
					3-4	0.04					
					4-5	0.04					
chanokane	gr-sl & l	W,S	29	5.0	0-1	0.12	(.35)	(.40)	0.20	5	0.80
					1-2	0.14					
					2-3	0.06					
					3-4	0.04					
					4-5	0.04					
chard	sil	S	14	5.0	0-1	0.20	(.25)	(.30)	0.43	4	4.62
					1-2	0.17					
					2-3	0.12					
					3-4	0.09					
					4-5	0.06					
chard	vfsl,l	S	14	5.0	0-1	0.19	(.25)	(.30)	0.43	4	4.62
					1-2	0.17					
					2-3	0.12					
					3-4	0.09					
					4-5	0.06					
chard	sl	S	20	5.0	0-1	0.15	(.40)	(.50)	0.37	4	3.42
					1-2	0.17					
					2-3	0.12					
					3-4	0.09					
					4-5	0.06					
chehalis	sil	---	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
chehalis	sic	---	30	5.0	0-1	0.18	(.30)	(.35)	0.20	5	0.80
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
chehalis	sicl	---	30	5.0	0-1	0.20	(.30)	(.35)	0.24	5	1.15
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
chelan	vfsl,sl	S	14	5.0	0-1	0.18	(.25)	(.30)	0.37	3	4.56
					1-2	0.18					
					2-3	0.18					
					3-4	0.17					
					4-5	0.12					
chelan	l	S	14	5.0	0-1	0.19	(.25)	(.30)	0.37	3	4.56
					1-2	0.18					
					2-3	0.18					
					3-4	0.17					
					4-5	0.12					
chelan	gr-sl	S	30	5.0	0-1	0.10	(.35)	(.40)	0.15	3	0.75
					1-2	0.18					
					2-3	0.18					
					3-4	0.17					
					4-5	0.12					
chemawa	l	---	14	5.0	0-1	0.17	(.30)	(.35)	0.43	5	3.70
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
cheney	sil, l	S	6	5.0	0-1	0.20	(.25)	(.30)	0.43	2	9.25
					1-2	0.18					
					2-3	0.09					
					3-4	0.05					
					4-5	0.05					
cheney	gr-sil & l	S	22	5.0	0-1	0.18	(.30)	(.35)	0.24	2	2.88
					1-2	0.18					
					2-3	0.09					
					3-4	0.05					
					4-5	0.05					
chesaw	sl	---	10	5.0	0-1	0.13	().5)	(.80)	0.24	1	
					1-2	0.03					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					

ies	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
saw	gr-ls	---	26	5.0	0-1	0.06	(1.)	(1.0)	0.10	1	1.00
					1-2	0.03					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
saw	gr-sl	---	18	5.0	0-1	0.09	(.8)	(.80)	0.15	1	2.25
					1-2	0.03					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
ewelah	fsl	W,S	28	5.0	0-1	0.14	(.40)	(.50)	0.32	5	2.05
					1-2	0.14					
					2-3	0.11					
					3-4	0.06					
					4-5	0.06					
iwawa	gr-fsl	---	30	5.0	0-1	0.18	(.30)	(.35)	0.24	5	1.15
					1-2	0.17					
					2-3	0.17					
					3-4	0.14					
					4-5	0.07					
inebar	sil, l	---	30	5.0	0-1	0.35	(.30)	(.35)	0.28	5	1.57
					1-2	0.30					
					2-3	0.30					
					3-4	0.30					
					4-5	0.25					
inebar	gr-sil	---	30	5.0	0-1	0.25	(.30)	(.35)	0.24	5	1.15
					1-2	0.30					
					2-3	0.30					
					3-4	0.30					
					4-5	0.25					
ispus	gr-sl	---	26	5.0	0-1	0.13	(.8)	(.80)	0.15	5	0.45
					1-2	0.08					
					2-3	0.08					
					3-4	0.13					
					4-5	0.19					
lallam	gr-sl	W	30	2.0	0-1	0.09	(.35)	(.40)	0.10	2	0.50
					1-2	0.08					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
clallam	gr-l	W	30	2.0	0-1 1-2	0.11 0.08	(.35)	(.40)	0.20	2	2.00
clallam	fsl	W	12	2.0	0-1 1-2	0.13 0.08	(.40)	(.50)	0.32	2	5.12
clato	sil	---	22	5.0	0-1 1-2 2-3 3-4 4-5	0.20 0.20 0.20 0.20 0.20	(.25)	(.30)	0.37	5	2.74
clayton	fsl	---	28	5.0	0-1 1-2 2-3 3-4 4-5	0.15 0.12 0.09 0.08 0.08	(.40)	(.50)	0.24	5	1.15
clayton	sl	---	28	5.0	0-1 1-2 2-3 3-4 4-5	0.12 0.12 0.09 0.08 0.08	(.40)	(.50)	0.24	5	1.15
clayton	l	---	22	5.0	0-1 1-2 2-3 3-4 4-5	0.15 0.12 0.09 0.08 0.08	(.30)	(.35)	0.37	5	2.74
cle elum	sil	---	6	3.0	0-1 1-2 2-3	0.22 0.18 0.18	(.25)	(.30)	0.43	2	9.25
cle elum	l	---	14	3.0	0-1 1-2 2-3	0.19 0.18 0.18	(.30)	(.35)	0.32	2	5.12

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
clemam	vfsl	S	12	5.0	0-1	0.16	(.40)	(.50)	0.49	5	4.80
					1-2	0.14					
					2-3	0.14					
					3-4	0.12					
					4-5	0.11					
clemam	fsl	S	20	5.0	0-1	0.14	(.40)	(.50)	0.37	5	2.74
					1-2	0.14					
					2-3	0.14					
					3-4	0.12					
					4-5	0.11					
clipper (dr.)	sil	W	14	5.0	0-1	0.28	(.30)	(.35)	0.28	2	3.92
					1-2	0.19					
					2-3	0.12					
					3-4	0.70					
					4-5	0.70					
cloquallum	sil	W	22	5.0	0-1	0.17	(.30)	(.35)	0.37	5	2.74
					1-2	0.17					
					2-3	0.18					
					3-4	0.19					
					4-5	0.19					
cloquallum	sicl	W	32	5.0	0-1	0.17	(.10)	(.20)	0.28	5	1.57
					1-2	0.17					
					2-3	0.18					
					3-4	0.19					
					4-5	0.19					
cloquato	sil	---	22	5.0	0-1	0.21	(.30)	(.35)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.13					
					4-5	0.09					
cokedale (dr.)	sil	W	6	5.0	0-1	0.19	(.25)	(.30)	0.49	2	12.01
					1-2	0.19					
					2-3	0.08					
					3-4	0.04					
					4-5	0.04					
colokum	sil	S	22	5.0	0-1	0.18	(.25)	(.30)	0.37	5	2.74
					1-2	0.13					
					2-3	0.15					
					3-4	0.15					
					4-5	0.12					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
colokum	cb-sil	S	30	5.0	0-1	0.18	(.30)	(.35)	0.20	5	0.80
					1-2	0.13					
					2-3	0.15					
					3-4	0.15					
					4-5	0.12					
colville	sil	W,S	23	5.0	0-1	0.20	(.15)	(.25)	0.37	5	2.74
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
conconully	l	---	20	5.0	0-1	0.17	(.40)	(.50)	0.32	5	2.05
					1-2	0.10					
					2-3	0.10					
					3-4	0.10					
					4-5	0.10					
conconully	gr-sl,fsl	---	26	5.0	0-1	0.08	(>1.)	(1.0)	0.15	5	0.45
					1-2	0.10					
					2-3	0.10					
					3-4	0.10					
					4-5	0.10					
coupeville (dr.)	l, sil	W	22	5.0	0-1	0.19	(.30)	(.35)	0.32	5	2.05
					1-2	0.17					
					2-3	0.18					
					3-4	0.19					
					4-5	0.19					
coveland (dr.)	gr-l &sil	W	30	5.0	0-1	0.16	(.30)	(.35)	0.24	5	1.15
					1-2	0.16					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
coveland (dr.)	sil, l	W	14	5.0	0-1	0.17	(.30)	(.35)	0.43	5	3.70
					1-2	0.16					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
covello (dr.)	sil	S	15	5.0	0-1	0.21	(.15)	(.25)	0.43	5	3.70
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
cowiche	sil,l	S	14	5.0	0-1	0.18	(.25)	0.37	0.43	5	3.70
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.13					
coweeman	sicl	W	24	5.0	0-1	0.17	(.15)	(.25)	0.32	5	2.05
					1-2	0.16					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
coweeman	sil	W	24	5.0	0-1	0.19	(.15)	(.25)	0.37	5	2.74
					1-2	0.16					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
cusick	sicl	---	16	5.0	0-1	0.18	(.10)	(.20)	0.43	5	3.70
					1-2	0.16					
					2-3	0.16					
					3-4	0.15					
					4-5	0.15					
custer (dr.)	fsl	W,S	27	5.0	0-1	0.12	(.40)	(.50)	0.28	5	1.57
					1-2	0.07					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
dalkena	fsl	W	20	5.0	0-1	0.15	(.40)	(.50)	0.32	5	2.05
					1-2	0.14					
					2-3	0.17					
					3-4	0.20					
					4-5	0.20					
dallesport	fsl,sl	---	18	5.0	0-1	0.13	().5)	(.80)	0.24	2	2.88
					1-2	0.11					
					2-3	0.02					
					3-4	0.02					
					4-5	0.02					
dart	cosl,lcos	---	26	5.0	0-1	0.08	()1.)	(1.0)	0.15	5	0.45
					1-2	0.05					
					2-3	0.05					
					3-4	0.05					
					4-5	0.05					
dearyton	sil, l	W	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.20					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
dearyton (var.)	sil, l	W	6	5.0	0-1	0.20	(.25)	(.30)	0.37	2	6.85
					1-2	0.20					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
deckerville (dr.)	gr-l	W	32	5.0	0-1	0.18	(.15)	(.25)	0.24	5	1.15
					1-2	0.15					
					2-3	0.10					
					3-4	0.09					
					4-5	0.09					
deckerville (dr.)	sil, sicl	W	24	5.0	0-1	0.19	(.10)	(.20)	0.37	5	2.74
					1-2	0.15					
					2-3	0.10					
					3-4	0.09					
					4-5	0.09					
deckerville (dr.)	gr-sicl	W	32	5.0	0-1	0.18	(.10)	(.20)	0.24	5	
					1-2	0.15					
					2-3	0.10					
					3-4	0.09					
					4-5	0.09					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
dick	ls	---	26	5.0	0-1	0.06	(1.)	(1.0)	0.24	5	1.15
					1-2	0.06					
					2-3	0.06					
					3-4	0.06					
					4-5	0.05					
dinkelman	sl	---	26	5.0	0-1	0.13	(.5)	(.80)	0.24	5	1.15
					1-2	0.12					
					2-3	0.10					
					3-4	0.09					
					4-5	0.09					
dinkelman	gr-sl	---	26	5.0	0-1	0.10	(.8)	(.80)	0.15	5	0.45
					1-2	0.12					
					2-3	0.10					
					3-4	0.09					
					4-5	0.09					
dinkelman	l,sil	---	22	5.0	0-1	0.18	(.25)	(.30)	0.37	5	2.74
					1-2	0.13					
					2-3	0.10					
					3-4	0.09					
					4-5	0.09					
disautel	sil,l	S	22	5.0	0-1	0.17	(.30)	(.35)	0.37	5	2.74
					1-2	0.17					
					2-3	0.14					
					3-4	0.14					
					4-5	0.14					
disautel	vfsl	S	14	5.0	0-1	0.15	(.30)	(.35)	0.43	5	3.70
					1-2	0.16					
					2-3	0.14					
					3-4	0.14					
					4-5	0.14					
dollar	l	W	14	2.5	0-1	0.16	(.30)	(.35)	0.37	3	4.56
					1-2	0.16					
					2-2.5	0.16					
donavan	l, sil	---	20	5.0	0-1	0.14	(.40)	(.50)	0.32	5	2.05
					1-2	0.12					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
donavan	sl	---	28	5.0	0-1	0.13	(.40)	(.50)	0.28	5	1.57
					1-2	0.12					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
donavan	gr-l & sil	---	28	5.0	0-1	0.12	(.40)	(.50)	0.24	5	1.15
					1-2	0.12					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
dougville	l	S	14	5.0	0-1	0.19	(.25)	(.30)	0.43	5	3.70
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
dragoon	sil, l	---	6	2.0	0-1	0.20	(.25)	(.30)	0.43	2	9.25
					1-2	0.20					
dupont (dr.)	muck	W	30	5.0	0-1	0.30	(.30)	(.35)	0.00	5	0.00
					1-2	0.20					
					2-3	0.30					
					3-4	0.30					
					4-5	0.30					
dungeness	sil	---	14	5.0	0-1	0.18	(.25)	(.30)	0.43	5	3.70
					1-2	0.16					
					2-3	0.16					
					3-4	0.12					
					4-5	0.08					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
earlmont (dr.)	sil	---	22	5.0	0-1	0.20	(.30)	(.35)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.21					
					4-5	0.22					
edmonds	l,sil	W	6	5.0	0-1	0.35	(.25)	(.30)	0.37	2	6.85
					1-2	0.11					
					2-3	0.07					
					3-4	0.05					
					4-5	0.05					
edmonds	fsl	W	20	5.0	0-1	0.15	(.40)	(.50)	0.24	2	2.88
					1-2	0.11					
					2-3	0.07					
					3-4	0.05					
					4-5	0.05					
ekrub	fs	S	11	1.5	0-1	0.11	(.40)	(.50)	0.24	1	5.76
					1-1.5	0.04					
eld	l	---	22	5.0	0-1	0.19	(.25)	(.30)	0.37	5	2.74
					1-2	0.19					
					2-3	0.18					
					3-4	0.17					
					4-5	0.17					
eliza	sil	W,S	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.14					
					2-3	0.12					
					3-4	0.12					
					4-5	0.12					
ellisforde	sil,l	S	14	5.0	0-1	0.17	(.30)	0.25	0.49	5	4.80
					1-2	0.18					
					2-3	0.21					
					3-4	0.21					
					4-5	0.21					
llisforde	fsl	S	20	5.0	0-1	0.15	(.40)	(.50)	0.32	5	2.05
					1-2	0.18					
					2-3	0.21					
					3-4	0.21					
					4-5	0.21					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
ellisforde	vfsl	S	14	5.0	0-1	0.15	(.30)	(.35)	0.49	5	4.80
					1-2	0.18					
					2-3	0.21					
					3-4	0.21					
					4-5	0.21					
elokia	sil	---	22	5.0	0-1	0.18	(.30)	(.35)	0.32	3	3.41
					1-2	0.17					
					2-3	0.11					
					3-4	0.11					
					4-5	0.06					
emdent	sil	S	14	5.0	0-1	0.18	(.25)	(.30)	0.43	5	3.70
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
endicott	sil	---	6	2.0	0-1	0.20	(.25)	(.30)	0.43	2	9.25
					1-2	0.20					
endicott	vfsl	---	6	2.0	0-1	0.16	(.30)	(.35)	0.49	2	12.01
					1-2	0.20					
endicott (var.)	sil	---	6	1.5	0-1	0.17	(.30)	(.35)	0.43	2	9.25
					1-1.5	0.17					
entiat	sl	---	4	1.5	0-1	0.11	(.50)	(.60)	0.28	1	7.84
					1-1.5	0.07					
entiat	gr-sl	---	18	1.5	0-1	0.10	().8)	(.80)	0.15	1	
					1-1.5	0.07					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
ephrata	fsl	S	12	5.0	0-1	0.14	(.40)	(.50)	0.32	2	5.12
					1-2	0.14					
					2-3	0.08					
					3-4	0.05					
					4-5	0.05					
ephrata	gr-sl	S	30	5.0	0-1	0.13	0.26	(.40)	0.15	2	1.13
					1-2	0.14					
					2-3	0.08					
					3-4	0.05					
					4-5	0.05					
ephrata	sl	S	20	5.0	0-1	0.14	(.40)	(.50)	0.24	2	2.88
					1-2	0.14					
					2-3	0.08					
					3-4	0.05					
					4-5	0.05					
esquatzel *	sil,l	S	14	5.0	0-1	0.28	0.18	0.35	0.43	5	3.70
					1-2	0.25					
					2-3	0.28					
					3-4	0.32					
					4-5	0.32					
esquatzel	fsl	S	28	5.0	0-1	0.17	(.50)	(.60)	0.24	5	1.15
					1-2	0.21					
					2-3	0.21					
					3-4	0.21					
					4-5	0.21					
esquatzel	vfsl	S	14	5.0	0-1	0.18	(.35)	(.40)	0.49	5	4.80
					1-2	0.21					
					2-3	0.21					
					3-4	0.21					
					4-5	0.21					
everett	gr-sl	---	18	5.0	0-1	0.11	().8)	(.80)	0.17	1	2.89
					1-2	0.08					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
everett	gr-l	---	10	5.0	0-1	0.11	().8)	(.80)	0.20	1	4.00
					1-2	0.08					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
everett	grv-l & sl	---	14	5.0	0-1	0.10	(.35)	(.40)	0.20	1	4.00
					1-2	0.08					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
everson	sil,cl	W	8	5.0	0-1	0.28	(.15)	(.25)	0.37	2	6.85
					1-2	0.18					
					2-3	0.07					
					3-4	0.06					
					4-5	0.05					
ewall	lfs	---	18	5.0	0-1	0.09	().5)	(.80)	0.32	5	2.05
					1-2	0.07					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
ewall	lcos,ls	---	26	5.0	0-1	0.08	()1.)	(1.0)	0.10	5	0.20
					1-2	0.07					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
ewall	s	---	26	5.0	0-1	0.06	()1.)	(1.0)	0.10	5	0.20
					1-2	0.06					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
anal	sl	---	30	5.0	0-1	0.16	(.35)	(.40)	0.20	5	0.80
					1-2	0.16					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
anal (var.)	l	---	22	5.0	0-1	0.16	(.30)	(.35)	0.37	5	2.74
					1-2	0.18					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
arrell	vfsl	S	6	5.0	0-1	0.16	(.30)	(.35)	0.49	4	6.00
					1-2	0.14					
					2-3	0.12					
					3-4	0.12					
					4-5	0.08					
rrell	sil	S	14	5.0	0-1	0.17	(.30)	(.35)	0.43	4	4.62
					1-2	0.14					
					2-3	0.12					
					3-4	0.12					
					4-5	0.08					
rrell	fsl	S	28	5.0	0-1	0.13	(.40)	0.50	0.24	4	1.44
					1-2	0.14					
					2-3	0.12					
					3-4	0.12					
					4-5	0.08					
ander	lfs	W,S	19	5.0	0-1	0.12	(.40)	(.50)	0.32	5	2.05
					1-2	0.13					
					2-3	0.13					
					3-4	0.15					
					4-5	0.13					
nder	sil	W,S	21	5.0	0-1	0.14	(.25)	(.30)	0.37	5	2.74
					1-2	0.13					
					2-3	0.13					
					3-4	0.15					
					4-5	0.13					
nder	sicl	W,S	31	5.0	0-1	0.15	(.10)	(.20)	0.28	5	1.57
					1-2	0.13					
					2-3	0.13					
					3-4	0.15					
					4-5	0.13					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
field (prot.)	sicl	---	30	5.0	0-1	0.35	(.30)	(.35)	0.28	5	1.57
					1-2	0.21					
					2-3	0.08					
					3-4	0.09					
					4-5	0.10					
finley	gr-fsl	S	26	5.0	0-1	0.11	().8)	(.80)	0.20	2	2.00
					1-2	0.09					
					2-3	0.06					
					3-4	0.04					
					4-5	0.04					
finley	fsl,vfsl	S	4	5.0	0-1	0.12	(.50)	(.60)	0.37	2	6.85
					1-2	0.09					
					2-3	0.06					
					3-4	0.04					
					4-5	0.04					
finley	sil,l	S	6	5.0	0-1	0.13	(.30)	(.35)	0.43	2	9.25
					1-2	0.09					
					2-3	0.06					
					3-4	0.04					
					4-5	0.04					
fishtrap (dr.)	muck	W	30	5.0	0-1	0.45	(.30)	(.35)	0.00	3	0.00
					1-2	0.30					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
flotag	gr-sl	---	26	5.0	0-1	0.13	().8)	(.80)	0.10	5	0.20
					1-2	0.12					
					2-3	0.12					
					3-4	0.16					
					4-5	0.16					

es	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
in	sil	W	24	5.0	0-1	0.20	(.15)	(.25)	0.37	5	2.74
					1-2	0.20					
					2-3	0.20					
					3-4	0.17					
					4-5	0.15					
n	sicl	W	24	5.0	0-1	0.20	(.10)	(.20)	0.37	5	2.74
					1-2	0.20					
					2-3	0.20					
					3-4	0.17					
					4-5	0.15					
son	l	---	20	5.0	0-1	0.17	(.40)	(.50)	0.32	3	3.41
					1-2	0.13					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
on	gr-l&sil	---	20	5.0	0-1	0.13	(.40)	(.50)	0.32	3	3.41
					1-2	0.11					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
m	grv-l	---	30	5.0	0-1	0.11	(.35)	(.40)	0.15	3	0.75
					1-2	0.11					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
	sil	W	22	5.0	0-1	0.17	(.30)	(.35)	0.37	5	2.74
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
	sil	---	30	5.0	0-1	0.21	(.30)	(.35)	0.28	5	1.57
					1-2	0.21					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
	sil	---	22	5.0	0-1	0.29	(.30)	(.35)	0.32	5	2.05
					1-2	0.25					
					2-3	0.25					
					3-4	0.25					
					4-5	0.17					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
giles (var.)	sil	---	24	5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.20					
					2-3	0.19					
					3-4	0.17					
					4-5	0.12					
gilligan	sil	---	6	5.0	0-1	0.20	(.25)	(.30)	0.43	3	6.16
					1 2	0.20					
					2-3	0.15					
					3-4	0.11					
					4-5	0.03					
gilligan (var.)	sil	---	14	5.0	0-1	0.21	(.25)	(.30)	0.43	5	3.70
					1 2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
glen	sl	---	28	5.0	0-1	0.22	(.40)	(.50)	0.20	5	0.80
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
glen (var.)	l	W	22	5.0	0-1	0.17	(.30)	(.35)	0.37	5	2.74
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
glenoma	grv-l	---	26	5.0	0-1	0.14	().8)	(.80)	0.15	5	0.45
					1-2	0.14					
					2-3	0.11					
					3-4	0.09					
					4-5	0.08					
glenrose	sil	---	14	5.0	0-1	0.19	(.25)	(.30)	0.43	5	3.70
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
glenrose	gr-sil	---	30	5.0	0-1	0.18	(.30)	(.35)	0.28	5	1.57
					1-2	0.19					
					2-3	0.19					
					3 4	0.19					
					4-5	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
goddard	sil,l	---	6	5.0	0-1	0.18	(.25)	(.30)	0.37	2	6.85
					1-2	0.10					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
goddard	sl,fsl	---	20	5.0	0-1	0.15	(.40)	(.50)	0.24	2	2.88
					1-2	0.10					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
godfrey (dr.)	sil	W	24	5.0	0-1	0.19	(.15)	(.25)	0.37	5	2.74
					1-2	0.16					
					2-3	0.14					
					3-4	0.14					
					4-5	0.14					
godfrey (dr.)	sicl	W	24	5.0	0-1	0.18	(.15)	(.25)	0.32	5	2.05
					1-2	0.16					
					2-3	0.14					
					3-4	0.14					
					4-5	0.14					
goldendale	sil	---	22	5.0	0-1	0.19	(.25)	(.30)	0.37	5	2.74
					1-2	0.19					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
goldendale(b.r)	sil	---	14	4.0	0-1	0.19	(.25)	(.30)	0.37	3	4.56
					1-2	0.19					
					2-3	0.20					
					3-4	0.20					
gorst	l,sil	S	6	1.0	0-1	0.17	(.30)	(.35)	0.37	1	13.69
gorst	gr-l	S	14	1.0	0-1	0.15	(.35)	(.40)	0.20	1	4.00

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
grayland (dr.)	sicl	W	24	4.0	0-1	0.20	(.10)	(.20)	0.37	5	2.74
					1-2	0.20					
					2-3	0.13					
					3-4	0.13					
green bluff	sil	---	14	5.0	0-1	0.20	(.25)	(.30)	0.43	5	3.70
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.19					
greenwater	ls	---	26	5.0	0-1	0.07	(1.)	(1.0)	0.17	5	0.58
					1-2	0.07					
					2-3	0.06					
					3-4	0.06					
					4-5	0.04					
greenwater	sl	---	26	5.0	0-1	0.10	(.8)	(.80)	0.20	5	0.80
					1-2	0.07					
					2-3	0.06					
					3-4	0.06					
					4-5	0.04					
grehalem (prot.)	sil		99	5.0	0-1	0.19	(.30)	(.39)	0.39	5	2.05
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
grove	grv-ls	---	26	5.0	0-1	0.05	(1.)	(1.0)	0.10	2	0.50
					1-2	0.04					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
grove	grv-sl	---	26	5.0	0-1	0.06	(1.)	(1.0)	0.05	2	0.13
					1-2	0.04					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
grove	gr-sl	---	26	5.0	0-1	0.08	(1.)	(1.0)	0.15	2	1.13
					1-2	0.04					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
guler	gr-sl	---	26	5.0	0-1	0.14	().8)	(.80)	0.17	5	0.58
					1-2	0.11					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
gunn	l,st-l	---	24	5.0	0-1	0.19	(.15)	(.25)	0.32	5	2.05
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.17					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
hagen	lfs,ls	---	26	5.0	0-1	0.11	().5)	(.80)	0.24	3	1.92
					1-2	0.09					
					2-3	0.08					
					3-4	0.05					
					4-5	0.05					
hagen	sl	---	26	5.0	0-1	0.12	().5)	(.80)	0.24	3	1.92
					1-2	0.09					
					2-3	0.08					
					3-4	0.05					
					4-5	0.05					
hale	sil	W	14	5.0	0-1	0.29	(.30)	(.35)	0.28	2	3.92
					1-2	0.25					
					2-3	0.10					
					3-4	0.07					
					4-5	0.07					
haley	cosl	---	26	5.0	0-1	0.10	().8)	(.80)	0.20	3	1.33
					1-2	0.11					
					2-3	0.01					
					3-4	0.06					
					4-5	0.06					
haley	fsl	---	20	5.0	0-1	0.11	(.50)	(.60)	0.32	3	3.41
					1-2	0.11					
					2-3	0.01					
					3-4	0.06					
					4-5	0.06					
hardesty	sil,vfsl	---	14	5.0	0-1	0.21	(.25)	(.30)	0.43	5	3.70
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
harstine	gr-sl	W	30	2.5	0-1	0.09	(.35)	(.40)	0.15	2	1.13
					1-2	0.09					
					2-2.5	0.09					
harwood	l,sil	S	6	2.5	0-1	0.17	(.30)	(.35)	0.37	2	6.85
					1-2	0.17					
					2-2.5	0.14					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
benningsen	l	---	22	5.0	0-1	0.15	(.30)	(.35)	0.37	5	2.74
					1-2	0.03					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
benningsen	gr-l	---	20	5.0	0-1	0.13	(.40)	(.50)	0.32	5	2.05
					1-2	0.03					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
berniston	sil	---	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
besseltine	sil, l	---	6	5.0	0-1	0.20	(.25)	(.30)	0.37	2	6.85
					1-2	0.09					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
besseltine	gr-sil & l	---	20	5.0	0-1	0.16	(.40)	(.50)	0.24	2	2.88
					1-2	0.09					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
esson	cl	---	24	5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
esson	gr-cl	---	32	5.0	0-1	0.18	(.15)	(.25)	0.20	5	0.80
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
ezel	lfs,ls,lvfs	S	26	5.0	0-1	0.11	().5)	0.80	0.24	5	1.15
					1-2	0.15					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
hezel	fs	S	26	5.0	0-1	0.12	(.0)	(.00)	0.17	5	0.50
					1-2	0.15					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
hillsboro	l, sil	---	14	5.0	0-1	0.18	(.25)	(.30)	0.49	5	4.00
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.08					
hockinson (dr.)	l	---	20	5.0	0-1	0.15	(.40)	(.50)	0.32	5	2.05
					1-2	0.13					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
hodgson	sil,l	W,S	16	5.0	0-1	0.20	(.15)	(.25)	0.43	5	3.70
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
hodgson	vfsl	W,S	16	5.0	0-1	0.18	(.15)	(.25)	0.49	5	4.00
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
hodgson(var)	sil	W	16	5.0	0-1	0.20	(.15)	(.25)	0.43	5	3.70
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
hoodoo (dr.)	sil	W	22	5.0	0-1	0.20	(.25)	(.30)	0.37	4	3.42
					1-2	0.18					
					2-3	0.17					
					3-4	0.17					
					4-5	0.15					
hoodoo (dr.)	vfsl, l	W	22	5.0	0-1	0.17	(.30)	(.35)	0.37	4	3.42
					1-2	0.18					
					2-3	0.17					
					3-4	0.17					
					4-5	0.15					

es	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
dal	sil	W	24	5.0	0-1	0.20	(.15)	(.25)	0.24	2	2.88
					1-2	0.19					
					2-3	0.16					
					3-4	0.15					
					4-5	0.15					
in	sil, l	---	30	4.0	0-1	0.22	(.30)	(.35)	0.24	4	1.44
					1-2	0.17					
					2-3	0.16					
					3-4	0.15					
in	gr-sil	---	28	4.0	0-1	0.15	(.40)	(.50)	0.28	4	1.96
					1-2	0.16					
					2-3	0.16					
					3-4	0.15					
us	gr-sl & ls	---	26	5.0	0-1	0.05	().1.)	(1.0)	0.15	3	0.75
					1-2	0.02					
					2-3	0.02					
					3-4	0.02					
					4-5	0.02					
is	cosl	---	10	5.0	0-1	0.08	().1.)	(1.0)	0.20	1	4.00
					1-2	0.05					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
ulips	sil	---	22	5.0	0-1	0.19	(.30)	(.35)	0.32	5	2.05
					1-2	0.18					
					2-3	0.06					
					3-4	0.04					
					4-5	0.04					
	gr-l	---	30	5.0	0-1	0.10	(.35)	(.40)	0.20	2	2.00
					1-2	0.06					
					2-3	0.05					
					3-4	0.05					
					4-5	0.05					
	l,sil	S	24	5.0	0-1	0.18	(.15)	(.25)	0.37	5	2.74
					1-2	0.17					
					2-3	0.15					
					3-4	0.15					
					4-5	0.14					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
hunters	sil	S	14	5.0	0-1	0.20	(.25)	(.30)	0.43	5	3.70
					1-2	0.19					
					2-3	0.19					
					3-4	0.16					
					4-5	0.16					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
Indianola	lfs, ls	---	26	5.0	0-1	0.09	(.8)	(.80)	0.15	5	0.45
					1-2	0.07					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					
Indianola	sl	---	26	5.0	0-1	0.10	(.5)	(.80)	0.24	5	1.15
					1-2	0.07					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					
Indianola (var.)	ls, lfs	W	12	5.0	0-1	0.09	(.50)	(.60)	0.37	3	4.56
					1-2	0.09					
					2-3	0.07					
					3-4	0.05					
					4-5	0.05					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
juno (prot.)	sl, l	---	10	5.0	0-1	0.09	().5)	(.80)	0.24	1	5.76
					1-2	0.06					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
juno (prot.)	gr-sl	---	10	5.0	0-1	0.06	()1.)	(1.0)	0.15	1	2.25
					1-2	0.05					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
juno (prot.)	ls	---	10	5.0	0-1	0.06	()1.)	(1.0)	0.20	1	4.00
					1-2	0.05					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					

ries	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
hlotus	vfsl	S	14	5.0	0-1	0.19	(.25)	(.30)	0.49	5	4.80
					1-2	0.17					
					2-3	0.17					
					3-4	0.16					
					4-5	0.16					
ılama	gr-l	---	30	5.0	0-1	0.12	(.35)	(.40)	0.20	5	0.80
					1-2	0.12					
					2-3	0.12					
					3-4	0.09					
					4-5	0.09					
aniksu	vfsl	---	22	5.0	0-1	0.15	(.30)	(.35)	0.37	4	3.42
					1-2	0.11					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
aniksu	sl, fsl	---	26	5.0	0-1	0.13	().5)	(.80)	0.28	4	1.96
					1-2	0.11					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
caniksu	l	---	22	5.0	0-1	0.16	(.30)	(.35)	0.37	4	3.42
					1-2	0.11					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
kapowsin	gr-l	W	30	2.0	0-1	0.20	(.30)	(.35)	0.15	2	1.13
					1-2	0.17					
kapowsin	sil	W	14	2.0	0-1	0.24	(.30)	(.35)	0.32	2	5.12
					1-2	0.17					
				5.0	0-1	0.12	().5)	(.80)	0.24	3	1.92
					1-2	0.11					
					2-3	0.07					
					3-4	0.05					
					4-5	0.03					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
kelso	sil	W	22	5.0	0-1	0.17	(.30)	(.35)	0.37	5	2.74
					1-2	0.17					
					2-3	0.17					
					3-4	0.19					
					4-5	0.19					
kennewick	lfs,fsl	S	21	5.0	0-1	0.12	(.30)	0.46	0.32	5	2.05
					1 2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
kennewick	vfsl	S	13	5.0	0-1	0.16	(.25)	(.30)	0.49	5	4.80
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
kennewick	sil	S	7	5.0	0-1	0.20	(.15)	(.25)	0.55	5	6.05
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
keystone	sl,fsl	---	26	5.0	0-1	0.08	(>1.)	(1.0)	0.20	5	0.80
					1-2	0.07					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
keystone	ls	---	26	5.0	0-1	0.07	(>1.)	(1.0)	0.17	5	0.58
					1-2	0.07					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
kickerville	sil	---	14	5.0	0-1	0.29	(.30)	(.35)	0.28	2	3.92
					1-2	0.24					
					2-3	0.13					
					3-4	0.05					
					4-5	0.05					
kiona	cb-sil & vfsl	S	22	5.0	0-1	0.19	(.25)	(.30)	0.37	5	2.74
					1-2	0.15					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					

ries	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
tsap	sil, l	W	22	5.0	0-1	0.20	(.30)	(.35)	0.32	5	2.05
					1-2	0.19					
					2-3	0.19					
					3-4	0.18					
					4-5	0.18					
tsap	gr-l	W	30	5.0	0-1	0.16	(.35)	(.40)	0.20	5	0.80
					1-2	0.19					
					2-3	0.19					
					3-4	0.18					
					4-5	0.18					
tsap	sicl	W	30	5.0	0-1	0.19	(.30)	(.35)	0.28	5	1.57
					1-2	0.19					
					2-3	0.19					
					3-4	0.18					
					4-5	0.18					
ttitas	sil	W,S	15	5.0	0-1	0.20	(.15)	(.25)	0.43	5	3.70
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
ıber	sil	W	21	5.0	0-1	0.20	(.25)	(.30)	0.32	5	2.05
					1-2	0.20					
					2-3	0.13					
					3-4	0.13					
					4-5	0.13					
ine	gr-sl	---	18	5.0	0-1	0.06	(1.)	(1.0)	0.15	1	2.25
					1-2	0.04					
					2-3	0.04					
					3-4	0.04					
					4-5	0.06					
hler *	lfs,ls,fs	S	26	2.5	0-1	0.11	(.8)	(.80)	0.20	2	2.00
					1-2	0.11					
					2-2.5	0.18					
ling	fsl,sl	W,S	20	5.0	0-1	0.13	(.50)	(.60)	0.37	5	2.74
					1-2	0.13					
					2-3	0.13					
					3-4	0.15					
					4-5	0.16					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
koeling	sil	W,S	14	5.0	0-1	0.18	(.25)	(.30)	0.43	5	3.70
					1-2	0.13					
					2-3	0.13					
					3-4	0.15					
					4-5	0.16					
koepke	l,sil	S	22	5.0	0-1	0.19	(.25)	(.30)	0.37	5	2.74
					1-2	0.16					
					2-3	0.07					
					3-4	0.04					
					4-5	0.11					
koepke	gr-sil	S	28	5.0	0-1	0.16	(.40)	(.50)	0.28	5	1.57
					1-2	0.15					
					2-3	0.07					
					3-4	0.04					
					4-5	0.11					
koerling	fsl, sl	W,S	20	5.0	0-1	0.13	(.50)	(.60)	0.37	5	2.74
					1-2	0.13					
					2-3	0.13					
					3-4	0.15					
					4-5	0.16					
koerling	sil	W,S	14	5.0	0-1	0.18	(.25)	(.30)	0.43	5	3.70
					1-2	0.13					
					2-3	0.13					
					3-4	0.15					
					4-5	0.16					
konert (dr.)	sicl	---	24	5.0	0-1	0.18	(.15)	(.25)	0.37	5	2.74
					1-2	0.17					
					2-3	0.16					
					3-4	0.17					
					4-5	0.18					
konert (dr.)	sil	---	16	5.0	0-1	0.18	(.15)	(.25)	0.43	5	3.70
					1-2	0.17					
					2-3	0.16					
					3-4	0.17					
					4-5	0.18					
konner (dr.)	sicl	---	32	5.0	0-1	0.20	(.10)	(.20)	0.28	5	1.57
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.18					

eries	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
abounty	sil	W	24	5.0	0-1	0.29	(.15)	(.25)	0.32	5	2.05
					1-2	0.17					
					2-3	0.12					
					3-4	0.12					
					4-5	0.12					
acamas (dr.)	sil	W	24	5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.13					
					2-3	0.08					
					3-4	0.08					
					4-5	0.08					
akesol	sil	---	16	5.0	0-1	0.20	(.15)	(.25)	0.43	5	3.70
					1-2	0.20					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
aketon	sil	W	16	5.0	0-1	0.20	(.15)	(.25)	0.43	5	3.70
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
aketon	fsl	W	22	5.0	0-1	0.16	(.30)	(.35)	0.32	5	2.05
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
ance	sil	S	16	5.0	0-1	0.20	(.15)	(.25)	0.49	5	4.80
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
arkin	sil	---	24	5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
rush	sil	---	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.20					
					2-3	0.06					
					3-4	0.15					
					4-5	0.16					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
larush	fsl	---	20	5.0	0-1	0.14	(.40)	(.50)	0.37	5	2.74
					1-2	0.18					
					2-3	0.06					
					3-4	0.15					
					4-5	0.16					
latah (dr.)	sil	W	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.20					
					2-3	0.17					
					3-4	0.15					
					4-5	0.15					
lauren	l	---	22	5.0	0-1	0.12	(.30)	(.35)	0.37	5	2.74
					1-2	0.07					
					2-3	0.07					
					3-4	0.07					
					4-5	0.04					
lauren	gr-l	---	30	5.0	0-1	0.10	(.35)	(.40)	0.20	5	0.80
					1-2	0.07					
					2-3	0.07					
					3-4	0.07					
					4-5	0.04					
lauren	grv-l	---	30	5.0	0-1	0.08	(.35)	(.40)	0.15	5	0.45
					1-2	0.07					
					2-3	0.07					
					3-4	0.07					
					4-5	0.04					
laxton	l	---	30	5.0	0-1	0.24	(.30)	(.35)	0.20	2	2.00
					1-2	0.20					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					
leader	fsl	---	18	5.0	0-1	0.11	(.5)	(.80)	0.32	3	3.41
					1-2	0.09					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					
leavenworth	fsl	W	20	5.0	0-1	0.15	(.50)	(.60)	0.32	5	2.05
					1-2	0.17					
					2-3	0.10					
					3-4	0.10					
					4-5	0.10					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
leavenworth	sil,l	W	14	5.0	0-1	0.18	(.25)	(.30)	0.43	5	3.70
					1-2	0.17					
					2-3	0.10					
					3-4	0.10					
					4-5	0.10					
leavenworth	ls	W	28	5.0	0-1	0.11	(.50)	(.60)	0.24	5	1.15
					1-2	0.17					
					2-3	0.10					
					3-4	0.10					
					4-5	0.10					
le bar	sil	---	30	5.0	0-1	0.23	(.30)	(.35)	0.28	5	1.57
					1-2	0.20					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
lickskillet	cb-sil,st-l	---	22	1.5	0-1	0.10	(.35)	(.40)	0.17	1	2.89
					1-1.5	0.10					
logy	sil	---	14	5.0	0-1	0.19	(.25)	(.30)	0.37	3	4.56
					1-2	0.07					
					2-3	0.05					
					3-4	0.04					
					4-5	0.04					
logy	cb-sil	---	20	5.0	0-1	0.15	(.40)	(.50)	0.32	3	3.41
					1-2	0.09					
					2-3	0.05					
					3-4	0.04					
					4-5	0.04					
lorena	sil	---	6	3.0	0-1	0.18	(.25)	(.30)	0.37	2	6.85
					1-2	0.18					
					2-3	0.20					
lummi (dr.)	sil	W	14	5.0	0-1	0.18	(.25)	(.30)	0.43	5	3.70
					1-2	0.15					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
lynden	sl	---	26	5.0	0-1	0.17	().8)	(.80)	0.17	2	1.45
					1-2	0.10					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					
lynnwood	ls	---	26	5.0	0-1	0.09	().5)	(.80)	0.24	5	1.15
					1-2	0.08					
					2-3	0.07					
					3-4	0.06					
					4-5	0.06					
lyre	grv-ls	---	26	5.0	0-1	0.06	()1.)	(1.0)	0.10	5	0.20
					1-2	0.06					
					2-3	0.04					
					3-4	0.03					
					4-5	0.03					
lyre	grv-sl	---	26	5.0	0-1	0.07	()1.)	(1.0)	0.10	5	0.20
					1-2	0.06					
					2-3	0.04					
					3-4	0.03					
					4-5	0.03					
lyre	gr-sl&l	---	26	5.0	0-1	0.08	()1.)	(1.0)	0.15	5	0.45
					1-2	0.06					
					2-3	0.04					
					3-4	0.03					
					4-5	0.03					
lyre (var.)	grv-sl	W	26	2.5	0-1	0.08	()1.)	(1.0)	0.10	2	0.50
					1-2	0.07					
					2-2.5	0.07					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
magallon	sil	S	6	5.0	0-1	0.16	(.30)	(.35)	0.43	3	6.16
					1-2	0.09					
					2-3	0.05					
					3-4	0.05					
					4-5	0.05					
magallon	fsl,sl	S	26	5.0	0-1	0.13	(.5)	(.00)	0.24	3	1.92
					1-2	0.09					
					2-3	0.05					
					3-4	0.05					
					4-5	0.05					
magallon	vfsl	S	6	5.0	0-1	0.17	(.30)	(.35)	0.49	3	0.00
					1-2	0.09					
					2-3	0.05					
					3-4	0.05					
					4-5	0.05					
malaga	gr-fsl&sl	---	22	5.0	0-1	0.12	0.39	(.40)	0.17	1	2.89
					1-2	0.07					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
malaga	cb-fsl&sl	---	22	5.0	0-1	0.12	(.35)	(.40)	0.17	1	2.89
					1-2	0.08					
					2-3	0.05					
					3-4	0.05					
					4-5	0.05					
malaga	st-sl	---	14	5.0	0-1	0.12	(.35)	(.40)	0.20	1	4.00
					1-2	0.08					
					2-3	0.05					
					3-4	0.05					
					4-5	0.05					
malo	vfsl	S	14	5.0	0-1	0.17	(.30)	(.35)	0.43	5	3.70
					1-2	0.16					
					2-3	0.15					
					3-4	0.14					
					4-5	0.09					
malo	sil	S	14	5.0	0-1	0.19	(.25)	(.30)	0.43	5	3.70
					1-2	0.17					
					2-3	0.15					
					3-4	0.14					
					4-5	0.09					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
malo (var.)	sl,fsl	---	26	5.0	0-1	0.13	().5)	(.80)	0.28	5	1.57
					1-2	0.12					
					2-3	0.12					
					3-4	0.09					
					4-5	0.04					
malott	vfsl	S	20	3.5	0-1	0.16	(.40)	(.50)	0.32	3	3.41
					1-2	0.14					
					2-3	0.14					
					3-3.5	0.12					
manastash	l	S	6	2.5	0-1	0.17	(.30)	(.35)	0.37	?	6.85
					1-2	0.14					
					2-2.5	0.14					
mansonia	fsl	---	22	5.0	0-1	0.22	(.30)	(.35)	0.32	5	2.05
					1-2	0.18					
					2-3	0.10					
					3-4	0.07					
					4-5	0.04					
marble	ls,lcos	---	26	5.0	0-1	0.07	()1.)	(1.0)	0.20	5	0.80
					1-2	0.06					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
marble	sl	---	30	5.0	0-1	0.80	(.35)	(.40)	0.24	5	1.15
					1-2	0.06					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
margerum	gr-sil	---	28	5.0	0-1	0.15	(.40)	(.50)	0.28	5	1.57
					1-2	0.15					
					2-3	0.15					
					3-4	0.16					
					4-5	0.18					
mart	sil	---	16	5.0	0-1	0.20	(.15)	(.25)	0.43	5	3.70
					1-2	0.19					
					2-3	0.18					
					3-4	0.14					
					4-5	0.10					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
artella	vfsl	W	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
artella	sil,l	W	22	5.0	0-1	0.20	(.30)	(.35)	0.32	5	2.05
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
artella	fsl	W	28	5.0	0-1	0.17	(.40)	(.50)	0.24	5	1.15
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
aytoun	sil	W	16	5.0	0-1	0.20	(.15)	(.25)	0.43	5	3.70
					1-2	0.19					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
c bee	sicl	W	30	5.0	0-1	0.19	(.30)	(.35)	0.28	5	1.57
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
c bee	sil	W	22	5.0	0-1	0.19	(.30)	(.35)	0.32	5	2.05
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
c bee	sic	W	30	5.0	0-1	0.18	(.30)	(.35)	0.24	5	1.15
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
c bee (var.)	sil	---	14	5.0	0-1	0.20	(.25)	(.30)	0.43	5	3.70
					1-2	0.18					
					2-3	0.18					
					3-4	0.19					
					4-5	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
mc gowen	gr-l	---	28	5.0	0-1 1-2 2-3 3-4 4-5	0.17 0.17 0.17 0.16 0.15	(.40)	(.50)	0.28	5	1.57
mc kenna (dr.)	gr-sil&l	W	30	2.5	0-1 1-2 2-2.5	0.15 0.11 0.09	(.30)	(.35)	0.24	3	1.92
mc murray (dr.)	muck	W	30	5.0	0-1 1-2 2-3 3-4 4-5	0.35 0.35 0.35 0.35 0.35	(.30)	(.35)	0.00	5	0.00
mikkalo	sil	S	6	3.0	0-1 1-2 2-3	0.20 0.19 0.19	(.25)	(.30)	0.43	2	9.25
minkler	sil	W	30	5.0	0-1 1-2 2-3 3-4 4-5	0.30 0.17 0.14 0.14 0.14	(.30)	(.35)	0.28	5	1.57
minniece (b.r.)	sicl	W	24	4.0	0-1 1-2 2-3 3-4	0.18 0.13 0.10 0.10	(.15)	(.25)	0.32	3	3.41
minniece (dr.)	sicl	W	24	5.0	0-1 1-2 2-3 3-4 4-5	0.20 0.10 0.07 0.08 0.08	(.15)	(.25)	0.32	5	2.05
minniece (dr.)	sil	W	24	5.0	0-1 1-2 2-3 3-4 4-5	0.20 0.10 0.07 0.08 0.08	(.15)	(.25)	0.37	5	2.74

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
mires (var.)	sl	---	26	5.0	0-1	0.12	().5)	(.80)	0.24	5	1.15
					1-2	0.11					
					2-3	0.06					
					3-4	0.04					
					4-5	0.04					
molcal	sil,l	S	15	5.0	0-1	0.20	(.15)	(.25)	0.43	5	3.70
					1-2	0.19					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
molcal	gr-sil&l	S	29	5.0	0-1	0.20	(.25)	(.30)	0.24	5	1.15
					1-2	0.19					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
molson	sil,l	S	22	5.0	0-1	0.18	(.25)	(.30)	0.37	5	2.74
					1-2	0.16					
					2-3	0.13					
					3-4	0.13					
					4-5	0.13					
molson	gr-l&sil	S	28	5.0	0-1	0.14	(.40)	(.50)	0.24	5	1.15
					1-2	0.14					
					2-3	0.13					
					3-4	0.13					
					4-5	0.13					
mondovi	sil	---	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
montesa	sil, l	W	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.17					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
moscow	sil, l	---	14	2.0	0-1	0.18	(.25)	(.30)	0.37	3	4.56
					1-2	0.14					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
moscow	gr-sil	---	20	2.0	0-1 1-2	0.17 0.14	(.40)	(.50)	0.24	2	2.88
mossyrock	sil	---	30	5.0	0-1 1-2 2-3 3-4 4-5	0.23 0.23 0.21 0.20 0.20	(.30)	(.35)	0.28	5	1.57
moxee	sil	S	8	1.5	0-1 1-1.5	0.20 0.16	(.15)	(.25)	0.49	1	24.01
moxee	cb-sil	S	8	1.5	0-1 1-1.5	0.18 0.16	(.15)	(.25)	0.32	1	10.24
moxee	fsl	S	4	1.5	0-1 1-1.5	0.16 0.16	(.50)	(.60)	0.32	1	10.24
mt vernon	vfsl	W	22	5.0	0-1 1-2 2-3 3-4 4-5	0.23 0.15 0.14 0.15 0.15	(.30)	(.35)	0.32	5	2.05
mt vernon	fsl	W	20	5.0	0-1 1-2 2-3 3-4 4-5	0.14 0.15 0.14 0.15 0.15	(.40)	(.50)	0.32	5	2.05
mukilteo	muck	W	30	5.0	0-1 1-2 2-3 3-4 4-5	0.32 0.32 0.32 0.32 0.32	(.30)	(.35)	0.00	5	0.00

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
naches	l	S	16	5.0	0-1 1-2 2-3 3-4 4-5	0.18 0.17 0.18 0.06 0.03	0.24	(.25)	0.32	2	5.12
naff	sil	---	24	5.0	0-1 1-2 2-3 3-4 4-5	0.20 0.19 0.18 0.18 0.18	(.15)	(.25)	0.37	5	2.74
nanum	l	M,S	13	5.0	0-1 1-2 2-3 3-4 4-5	0.17 0.17 0.17 0.14 0.06	(.25)	(.30)	0.37	3	4.56
narcisse	l, sil	---	14	5.0	0-1 1-2 2-3 3-4 4-5	0.18 0.16 0.13 0.12 0.12	(.25)	(.30)	0.43	5	3.70
narcisse	gr-l	---	30	5.0	0-1 1-2 2-3 3-4 4-5	0.17 0.16 0.13 0.12 0.12	(.35)	(.40)	0.20	5	0.80
narcisse	vfsl	---	14	5.0	0-1 1-2 2-3 3-4 4-5	0.17 0.16 0.13 0.12 0.12	(.30)	(.35)	0.49	5	4.80
national	gr-sl	---	26	5.0	0-1 1-2 2-3 3-4 4-5	0.12 0.10 0.15 0.16 0.14	(.8)	(.80)	0.15	5	0.45

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
neilton	grv-ls	---	26	5.0	0-1	0.04	().1.)	(1.0)	0.10	2	0.50
					1-2	0.04					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
neilton	gr-ls	---	26	5.0	0-1	0.05	().1.)	(1.0)	0.15	2	1.13
					1-2	0.04					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
neilton	grv-sl	---	26	5.0	0-1	0.06	().1.)	(1.0)	0.10	2	0.50
					1-2	0.04					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
nemah (dr.)	sicl, sic	W	32	5.0	0-1	0.17	(.15)	(.25)	0.24	5	1.15
					1-2	0.15					
					2-3	0.15					
					3-4	0.13					
					4-5	0.13					
neppel	fsl	S	12	5.0	0-1	0.16	(.40)	(.50)	0.32	2	5.12
					1-2	0.14					
					2-3	0.05					
					3-4	0.03					
					4-5	0.03					
neppel	vfsl	S	6	5.0	0-1	0.16	0.27	(.35)	0.43	2	9.25
					1-2	0.14					
					2-3	0.05					
					3-4	0.03					
					4-5	0.03					
nespelem	sil	S	6	2.0	0-1	0.20	(.25)	(.30)	0.43	3	6.16
					1-2	0.20					
netarts	fsl	---	26	5.0	0-1	0.09	().8)	(.80)	0.17	5	0.58
					1-2	0.07					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					

ries	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
tarts	fs, lfs	---	26	5.0	0-1	0.07	()1.)	(1.0)	0.17	5	0.58
					1-2	0.07					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					
trac	s	---	26	5.0	0-1	0.09	().8)	(.80)	0.10	3	0.33
					1-2	0.08					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
berg	fsl, sl	---	26	5.0	0-1	0.13	().5)	(.80)	0.28	5	1.57
					1-2	0.13					
					2-3	0.12					
					3-4	0.11					
					4-5	0.11					
berg	l, sil	---	22	5.0	0-1	0.18	(.30)	(.35)	0.32	5	2.05
					1-2	0.13					
					2-3	0.12					
					3-4	0.11					
					4-5	0.11					
berg (var.)	sil	W	14	5.0	0-1	0.17	(.30)	(.35)	0.43	5	3.70
					1-2	0.16					
					2-3	0.16					
					3-4	0.10					
					4-5	0.06					
bon	l,sil	---	22	5.0	0-1	0.17	(.30)	(.35)	0.37	5	2.74
					1-2	0.15					
					2-3	0.14					
					3-4	0.14					
					4-5	0.14					
bon	grv-l	---	30	5.0	0-1	0.11	(.35)	(.40)	0.10	5	0.20
					1-2	0.14					
					2-3	0.14					
					3-4	0.14					
					4-5	0.14					
bon	gr-l	---	28	5.0	0-1	0.14	(.40)	(.50)	0.24	5	1.15
					1-2	0.14					
					2-3	0.14					
					3-4	0.14					
					4-5	0.14					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
nez perce	sil	W,S	24	5.0	0-1	0.20	(.15)	(.25)	0.37	5	2.74
					1-2	0.18					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
nighthawk	l	S	12	5.0	0-1	0.15	(.40)	(.50)	0.32	2	5.12
					1-2	0.11					
					2-3	0.08					
					3-4	0.08					
					4-5	0.08					
nisqually	lfs, ls	---	26	5.0	0-1	0.10	().8)	(.80)	0.20	5	0.80
					1-2	0.10					
					2-3	0.08					
					3-4	0.05					
					4-5	0.05					
nisqually	fsl	---	28	5.0	0-1	0.13	(.40)	(.50)	0.24	5	1.15
					1-2	0.10					
					2-3	0.08					
					3-4	0.05					
					4-5	0.05					
nook	sil	W	22	5.0	0-1	0.19	(.25)	(.30)	0.37	5	2.74
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
nookchamps	sil	W	24	5.0	0-1	0.19	(.10)	(.20)	0.37	5	2.74
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
nooksack	sil	---	22	5.0	0-1	0.19	(.25)	(.30)	0.37	5	2.74
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
norma (dr.)	sl	W	26	5.0	0-1	0.13	().5)	(.80)	0.24	5	1.15
					1-2	0.13					
					2-3	0.13					
					3-4	0.13					
					4-5	0.13					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
norma (dr.)	sil, l	W	22	5.0	0-1	0.18	(.30)	(.35)	0.32	5	2.05
					1-2	0.13					
					2-3	0.13					
					3-4	0.13					
					4-5	0.13					
norma (dr.)	fsl	W	18	5.0	0-1	0.13	().5)	(.80)	0.32	5	2.05
					1 2	0.13					
					2-3	0.13					
					3-4	0.13					
					4-5	0.13					
novark	sil	S	6	5.0	0-1	0.18	(.25)	(.30)	0.43	3	6.16
					1-2	0.18					
					2-3	0.12					
					3-4	0.06					
					4-5	0.06					
novark	vfsl	S	6	5.0	0-1	0.17	(.30)	(.35)	0.49	3	8.00
					1-2	0.18					
					2-3	0.12					
					3-4	0.06					
					4-5	0.06					
uby (dr.)	sil	W	22	5.0	0-1	0.20	(.30)	(.35)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
ocosta (dr.)	sicl	W	24	5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.16					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
odne (dr.)	sil	W	16	5.0	0-1	0.19	(.15)	(.25)	0.43	5	3.70
					1-2	0.19					
					2-3	0.18					
					3-4	0.16					
					4-5	0.16					
odne (dr.)	sicl	W	24	5.0	0-1	0.18	(.15)	(.25)	0.32	5	2.05
					1-2	0.19					
					2-3	0.18					
					3-4	0.16					
					4-5	0.16					
okanogan	l	S	22	5.0	0-1	0.17	(.30)	(.35)	0.37	5	2.74
					1-2	0.16					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
olequa	sil	---	24	5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
olequa (var.)	sicl	W	24	5.0	0-1	0.17	(.10)	(.20)	0.39	5	3.04
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
oliphant	sil	S	6	5.0	0-1	0.20	(.25)	(.30)	0.43	3	6.16
					1-2	0.20					
					2-3	0.19					
					3-4	0.14					
					4-5	0.10					
olympic	cl, sicl	---	32	5.0	0-1	0.20	(.15)	(.25)	0.24	5	1.15
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
olympic	sil	---	24	5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
olympic	gr-sil	---	30	5.0	0-1	0.16	(.30)	(.35)	0.24	5	1.15
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
olympic (var.)	gr-sil	---	30	5.0	0-1	0.20	(.30)	(.35)	0.24	5	1.15
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
olympic (var.)	cb-sil	---	30	5.0	0-1	0.19	(.30)	(.35)	0.24	5	1.15
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
onyx	sil	---	14	5.0	0-1	0.20	(.25)	0.30	0.43	5	3.70
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
orcas (dr.)	peat	---	28	5.0	0-1	0.35	(.40)	(.50)	0.00	5	0.00
					1-2	0.35					
					2-3	0.35					
					3-4	0.35					
					4-5	0.35					
oridia (dr.)	sil	W	14	5.0	0-1	0.20	(.25)	(.30)	0.49	5	4.80
					1-2	0.20					
					2-3	0.20					
					3-4	0.19					
					4-5	0.17					
orting	l, fsl	W	22	5.0	0-1	0.17	(.30)	(.35)	0.37	5	2.74
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
orting	sl	W	30	5.0	0-1	0.17	(.30)	(.35)	0.24	5	1.15
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
orwig	sl	---	28	5.0	0-1	0.10	(.40)	(.50)	0.24	5	1.15
					1-2	0.08					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					
outlook	sil	W,S	15	5.0	0-1	0.19	(.15)	(.25)	0.43	5	3.70
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
outlook	fsl	W,S	19	5.0	0-1	0.15	(.40)	(.50)	0.32	5	2.05
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
outlook	vfsl	W,S	11	5.0	0-1	0.15	(.40)	(.50)	0.49	5	4.80
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
ovall	gr-l	---	26	5.0	0-1	0.14	().8)	(.80)	0.17	2	1.45
					1-2	0.09					
					2-3	0.09					
					3-4	0.09					
					4-5	0.09					
owhi	fsl,sl	---	10	5.0	0-1	0.12	().5)	(.80)	0.32	2	5.12
					1-2	0.10					
					2-3	0.07					
					3-4	0.02					
					4-5	0.02					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
palouse	sil	---	22	5.0	0-1	0.20	(.30)	(.35)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
pangborn (dr.)	muck	W	30	5.0	0-1	0.50	(.30)	(.35)	0.00	5	0.00
					1-2	0.46					
					2-3	0.45					
					3-4	0.45					
					4-5	0.45					
para	gr-l	---	28	5.0	0-1	0.16	(.40)	(.50)	0.24	5	1.15
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
para (var.)	l	---	28	5.0	0-1	0.16	(.40)	(.50)	0.28	5	1.57
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
paramenter	sil	---	6	5.0	0-1	0.20	(.25)	(.30)	0.43	2	9.25
					1-2	0.08					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
pasco	sil	W,S	13	5.0	0-1	0.17	(.25)	(.30)	0.43	5	3.70
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
pasco	fsl	W,S	19	5.0	0-1	0.15	(.40)	(.50)	0.37	5	2.74
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
pastik	sil, l	W	24	5.0	0-1	0.30	(.15)	(.25)	0.32	5	2.05
					1-2	0.30					
					2-3	0.23					
					3-4	0.17					
					4-5	0.17					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
patit cr.	sil	---	14	5.0	0-1	0.21	(.25)	(.30)	0.37	3	4.56
					1-2	0.20					
					2-3	0.18					
					3-4	0.06					
					4-5	0.06					
patit cr.	gr&cb-sil	---	30	5.0	0-1	0.18	(.30)	(.35)	0.24	3	1.92
					1-2	0.20					
					2-3	0.18					
					3-4	0.06					
					4-5	0.06					
pedigo	sil	S	23	5.0	0-1	0.20	(.15)	0.15	0.37	5	2.74
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
pedigo	lfs	S	29	5.0	0-1	0.15	(.35)	(.40)	0.17	5	0.58
					1 2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
peoh	sil	W	24	5.0	0-1	0.18	(.15)	(.25)	0.37	5	2.74
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
peone (dr.)	sil	W	14	5.0	0-1	0.20	(.25)	(.30)	0.43	5	3.70
					1-2	0.20					
					2-3	0.20					
					3-4	0.17					
					4-5	0.14					
peshastin	l	S	22	5.0	0-1	0.13	(.30)	(.35)	0.37	5	2.74
					1-2	0.07					
					2-3	0.05					
					3-4	0.05					
					4-5	0.05					
phoebe	sl	---	26	5.0	0-1	0.13	().5)	(.80)	0.24	4	1.44
					1-2	0.12					
					2-3	0.11					
					3-4	0.07					
					4-5	0.07					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
phoebe	fsl	---	18	5.0	0-1	0.13	().5)	(.80)	0.32	4	2.56
					1-2	0.12					
					2-3	0.11					
					3-4	0.07					
					4-5	0.07					
pilchuck (prot.)	fs, lfs	---	26	5.0	0-1	0.07	()1.)	(1.0)	0.20	5	0.80
					1-2	0.07					
					2-3	0.07					
					3-4	0.05					
					4-5	0.04					
pilchuck (prot.)	s, ls	---	26	5.0	0-1	0.06	()1.)	(1.0)	0.10	5	0.20
					1-2	0.06					
					2-3	0.07					
					3-4	0.05					
					4-5	0.04					
pilchuck (prot.)	vfsl	---	20	5.0	0-1	0.16	(.50)	(.60)	0.37	5	2.74
					1-2	0.13					
					2-3	0.07					
					3-4	0.05					
					4-5	0.04					
pogue	fsl,sl	---	12	5.0	0-1	0.14	(.40)	0.30	0.32	2	5.12
					1-2	0.11					
					2-3	0.06					
					3-4	0.03					
					4-5	0.03					
›ogue	gr-fsl	---	30	5.0	0-1	0.11	(.35)	(.40)	0.20	2	2.00
					1-2	0.11					
					2-3	0.06					
					3-4	0.03					
					4-5	0.03					
›ogue	l	---	12	5.0	0-1	0.15	(.40)	(.50)	0.32	2	5.12
					1-2	0.11					
					2-3	0.06					
					3-4	0.03					
					4-5	0.03					
›ulsbo	gr-sl & l	W	26	5.0	0-1	0.11	().8)	(.80)	0.15	2	1.13
					1-2	0.11					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
poulsbo	grv-sl	W	26	5.0	0-1	0.11	(.0.8)	(.80)	0.10	2	0.50
					1-2	0.11					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
powell	sil	W	32	5.0	0-1	0.23	(.15)	(.25)	0.28	5	1.57
					1-2	0.14					
					2-3	0.10					
					3-4	0.10					
					4-5	0.10					
prather	sicl	W	28	5.0	0-1	0.17	(.40)	(.50)	0.28	5	1.57
					1-2	0.17					
					2-3	0.14					
					3-4	0.14					
					4-5	0.10					
prosser	vfsl	S	6	2.5	0-1	0.17	(.30)	(.35)	0.49	2	12.01
					1-2	0.18					
					2-2.5	0.13					
prosser	sil	S	6	2.5	0-1	0.18	(.25)	(.30)	0.43	2	9.25
					1-2	0.18					
					2-2.5	0.13					
prosser	sl	S	12	2.5	0-1	0.15	(.40)	(.50)	0.28	2	3.92
					1-2	0.18					
					2-2.5	0.13					
puget	sicl,sil	W	30	5.0	0-1	0.20	(.30)	(.35)	0.28	5	1.57
					1-2	0.20					
					2-3	0.20					
					3-4	0.19					
					4-5	0.17					
puyallup	fsl,sl	---	10	5.0	0-1	0.14	(0.5)	(.80)	0.28	2	3.92
					1-2	0.10					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
puyallup	sil,l	---	12	5.0	0-1	0.16	(.40)	(.50)	0.28	2	3.92
					1-2	0.10					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
quicksell	l	---	32	5.0	0-1	0.18	(.15)	(.25)	0.24	5	1.15
					1-2	0.19					
					2-3	0.19					
					3-4	0.18					
					4-5	0.16					
quiden	st-l	---	28	5.0	0-1	0.15	(.40)	(.50)	0.28	5	1.57
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.13					
quillayute	sil,sicl	---	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5	2.74
					1-2	0.20					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
quincy *	fs,s	S	26	5.0	0-1	0.07	4.00	0.91	0.17	5	0.58
					1-2	0.07					
					2-3	0.07					
					3-4	0.08					
					4-5	0.08					
quincy *	lfs,ls	S	26	5.0	0-1	0.08	4.00	0.91	0.17	5	0.58
					1-2	0.10					
					2-3	0.09					
					3-4	0.09					
					4-5	0.10					
quincy(gr.sub)	lfs	S	26	5.0	0-1	0.08	().1_)	(1.0)	0.17	3	0.96
					1-2	0.07					
					2-3	0.07					
					3-4	0.06					
					4-5	0.06					
quincy(l.sub)	lfs	S	18	5.0	0-1	0.09	().5)	(.80)	0.32	5	2.05
					1-2	0.09					
					2-3	0.09					
					3-4	0.09					
					4-5	0.14					

	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
	fsl, sl	---	18	5.0	0-1	0.14	(.5)	(.80)	0.32	5	2.05
					1-2	0.14					
					2-3	0.09					
					3-4	0.09					
					4-5	0.09					
	l	---	22	5.0	0-1	0.19	(.35)	(.40)	0.32	5	2.05
					1-2	0.14					
					2-3	0.09					
					3-4	0.09					
					4-5	0.09					
ub	vfsl	---	22	5.0	0-1	0.17	(.30)	(.35)	0.37	5	2.74
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.17					
ub	sil	---	22	5.0	0-1	0.19	(.25)	(.30)	0.37	5	2.74
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.17					
in	sil, l	---	24	5.0	0-1	0.20	(.15)	(.25)	0.37	5	2.74
					1-2	0.18					
					2-3	0.17					
					3-4	0.20					
					4-5	0.20					
				5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.18					
					2-3	0.17					
					3-4	0.20					
					4-5	0.20					
				5.0	0-1	0.20	(.15)	(.25)	0.24	5	1.15
					1-2	0.16					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
				5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.16					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
reeser	l	---	22	3.0	0-1	0.16	(.30)	(.35)	0.24	2	2.88
					1-2	0.15					
					2-3	0.15					
rennie (dr.)	sicl	W	32	5.0	0-1	0.19	(.15)	(.25)	0.28	5	1.57
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
renslow	sil	S	14	5.0	0-1	0.20	(.25)	(.30)	0.49	5	4.80
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
renton (dr.)	sil	W,S	14	5.0	0-1	0.20	(.25)	(.30)	0.43	5	3.70
					1-2	0.11					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
republic	gr-l&sl	S	30	5.0	0-1	0.13	(.35)	(.40)	0.17	5	0.58
					1-2	0.13					
					2-3	0.12					
					3-4	0.10					
					4-5	0.09					
republic	fsl,sl	S	28	5.0	0-1	0.15	(.40)	(.50)	0.28	5	1.57
					1-2	0.13					
					2-3	0.12					
					3-4	0.10					
					4-5	0.09					
republic	sil,l	S	20	5.0	0-1	0.15	(.40)	(.50)	0.32	5	2.05
					1-2	0.13					
					2-3	0.12					
					3-4	0.10					
					4-5	0.09					
ritzcal	sil	S	14	5.0	0-1	0.19	(.25)	(.30)	0.43	5	3.70
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
ritzville *	sil	S	14	5.0	0-1	0.18	(.25)	0.27	0.43	5	3.70
					1-2	0.21					
					2-3	0.23					
					3-4	0.27					
					4-5	0.26					
ritzville	vfsl	S	14	5.0	0-1	0.20	(.25)	0.30	0.49	5	4.80
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
ritzville(var)	sil	S	14	5.0	0-1	0.19	(.25)	0.30	0.49	5	4.80
					1-2	0.15					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
ritzville(var)	cb-sil	S	30	5.0	0-1	0.17	(.35)	(.40)	0.20	5	0.80
					1-2	0.15					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
roche	gr-l	W	30	2.0	0-1	0.12	(.35)	(.40)	0.20	3	1.33
					1-2	0.11					
roche	l	W	20	2.0	0-1	0.15	(.40)	(.50)	0.32	3	3.41
					1-2	0.11					
roche	gr-sl	W	30	2.0	0-1	0.08	(.35)	(.40)	0.15	3	0.75
					1-2	0.11					
roloff	sil	S	6	2.0	0-1	0.20	(.25)	0.25	0.43	2	9.25
					1-2	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
roloff	cb-sil	S	14	2.0	0-1 1-2	0.18 0.19	(.30)	(.35)	0.28	2	3.92
roloff *	vfsl	S	6	2.0	0-1 1-2	0.17 0.19	(.30)	(.35)	0.49	2	12.01
rose valley	sil	W	24	5.0	0-1 1-2 2-3 3-4 4-5	0.20 0.17 0.16 0.15 0.15	(.15)	(.25)	0.37	5	2.74
royal *	lfs,ls	S	18	5.0	0-1 1-2 2-3 3-4 4-5	0.11 0.14 0.18 0.17 0.15	().5)	(.80)	0.32	5	2.05
royal *	fsl,vfsl	S	20	5.0	0-1 1-2 2-3 3-4 4-5	0.10 0.14 0.18 0.18 0.18	0.43	(.60)	0.37	5	2.74
royal	sil	S	12	5.0	0-1 1-2 2-3 3-4 4-5	0.15 0.12 0.12 0.12 0.12	(.50)	(.60)	0.49	5	4.80
royal(sub)	vfsl,fsl	S	4	3.5	0-1 1-2 2-3 3-3.5	0.14 0.12 0.12 0.12	(.50)	(.60)	0.43	3	6.16
royal(sub)	lfs	S	18	3.5	0-1 1-2 2-3 3-3.5	0.12 0.12 0.12 0.12	().5)	(.80)	0.32	3	3.41

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
roza	cl	S	24	5.0	0-1	0.17	(.10)	(.20)	0.32	5	2.05
					1-2	0.16					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
sacheen	lfs	---	18	5.0	0-1	0.09	(.5)	(.80)	0.32	5	2.05
					1-2	0.08					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
sacheen(var.)	sil	W	14	5.0	0-1	0.15	(.30)	(.35)	0.43	5	3.70
					1-2	0.06					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
sagehill *	vfsl	S	12	5.0	0-1	0.15	0.36	0.40	0.49	5	4.80
					1-2	0.19					
					2-3	0.24					
					3-4	0.27					
					4-5	0.28					
sagehill	lvfs	S	14	5.0	0-1	0.19	(.35)	(.40)	0.43	5	3.70
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
sagehill *	fsl	S	20	5.0	0-1	0.11	(.50)	(.60)	0.32	5	2.05
					1-2	0.21					
					2-3	0.25					
					3-4	0.24					
					4-5	0.26					
sagehill(sub)	vfsl	S	14	5.0	0-1	0.16	(.30)	(.35)	0.43	5	3.70
					1-2	0.16					
					2-3	0.16					
					3-4	0.16					
					4-5	0.04					
sagemoor	fsl	S	20	5.0	0-1	0.16	(.50)	(.60)	0.32	5	2.05
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
sagemoor	sil	S	14	5.0	0-1	0.18	0.20	0.32	0.4[illegible]		
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					

Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
vfsl	S	14	5.0	0-1	0.16	(.30)	(.35)	0.49	5	4.80
				1-2	0.21					
				2-3	0.30					
				3-4	0.30					
				4-5	0.28					
sil	S	8	5.0	0-1	0.18	(.15)	(.25)	0.43	2	9.25
				1-2	0.11					
				2-3	0.06					
				3-4	0.06					
				4-5	0.06					
sil	M	22	5.0	0-1	0.19	(.25)	(.30)	0.37	5	2.74
				1-2	0.19					
				2-3	0.19					
				3-4	0.19					
				4-5	0.19					
sicl	---	30	5.0	0-1	0.20	(.30)	(.35)	0.28	5	1.57
				1-2	0.17					
				2-3	0.16					
				3-4	0.16					
				4-5	0.16					
sil	---	22	5.0	0-1	0.20	(.30)	(.35)	0.32	5	2.05
				1-2	0.17					
				2-3	0.16					
				3-4	0.16					
				4-5	0.16					
sic	---	32	5.0	0-1	0.15	(.10)	(.20)	0.20	5	0.80
				1-2	0.15					
				2-3	0.15					
				3-4	0.15					
				4-5	0.17					
sil	M	24	5.0	0-1	0.20	(.15)	(.25)	0.37	5	2.74
				1-2	0.19					
				2-3	0.19					
				3-4	0.19					
				4-5	0.19					
sil	M	22	5.0	0-1	0.21	(.25)	(.30)	0.37	5	2.74
				1-2	0.17					
				2-3	0.17					
				3-4	0.17					
				4-5	0.17					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
san juan	cosl, sl	---	26	5.0	0-1	0.10	(>.8)	(.80)	0.20	5	0.80
					1-2	0.07					
					2-3	0.05					
					3-4	0.04					
					4-5	0.04					
san juan	gr-sl	---	26	5.0	0-1	0.09	(>.8)	(.80)	0.15	5	0.45
					1-2	0.07					
					2-3	0.05					
					3-4	0.04					
					4-5	0.04					
sara	sil	W	14	5.0	0-1	0.17	(.30)	(.35)	0.43	5	3.70
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
sara	sicl	W	24	5.0	0-1	0.17	(.10)	(.20)	0.32	5	2.05
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
satsop	sil, l	---	20	5.0	0-1	0.17	(.50)	(.60)	0.37	5	2.74
					1-2	0.16					
					2-3	0.13					
					3-4	0.12					
					4-5	0.12					
sauk	sil	---	30	5.0	0-1	0.25	(.30)	(.35)	0.28	5	1.57
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
sauvie (prot.)	sicl, sil	---	24	5.0	0-1	0.20	(.10)	(.20)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.17					
sauvola	sicl	W	32	5.0							

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
sauvola	l	W	24	5.0	0-1	0.20	(.15)	(.25)	0.32	5	2.05
					1-2	0.19					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
scala	fsl	---	18	5.0	0-1	0.15	().5)	(.80)	0.32	5	2.05
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.19					
scamman	sicl	W	30	5.0	0-1	0.22	(.30)	(.35)	0.28	5	1.57
					1-2	0.20					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
scamman	sil	W	22	5.0	0-1	0.22	(.30)	(.35)	0.32	5	2.05
					1-2	0.20					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
schooley (dr.)	sil	W	30	5.0	0-1	0.19	(.30)	(.35)	0.28	5	1.57
					1-2	0.17					
					2-3	0.14					
					3-4	0.21					
					4-5	0.22					
schumacher	gr-sil	---	32	5.0	0-1	0.19	(.15)	(.25)	0.28	5	1.57
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
schumacher	sil	---	24	5.0	0-1	0.19	(.15)	(.25)	0.32	5	2.05
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
scoon	sil,l	S	6	1.5	0-1	0.16	0.20	0.35	0.49	1	24.01
					1-1.5	0.15					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
scoon	vfsl	S	6	1.5	0-1 1-1.5	0.15 0.15	(.30)	(.35)	0.43	1	18.49
scoon	gr-sil	S	14	1.5	0-1 1-1.5	0.14 0.15	(.30)	(.35)	0.24	1	5.76
scootney	l,sil	S	14	5.0	0-1 1-2 2-3 3-4 4-5	0.19 0.15 0.08 0.07 0.07	0.25	(.30)	0.43	5	3.70
scootney	gr-sil	S	30	5.0	0-1 1-2 2-3 3-4 4-5	0.18 0.15 0.08 0.07 0.07	(.30)	(.35)	0.24	5	1.15
scootney *	vfsl	S	6	5.0	0-1 1-2 2-3 3-4 4-5	0.24 0.27 0.24 0.07 0.07	0.28	(.30)	0.55	5	6.05
scotia	fsl	---	20	5.0	0-1 1-2 2-3 3-4 4-5	0.15 0.10 0.11 0.11 0.11	(.40)	(.50)	0.32	5	2.05
scabblers	sil,l	---	6	5.0	0-1 1-2 2-3 3-4 4-5	0.16 0.09 0.06 0.06 0.06	(.30)	(.35)	0.43	2	9.25
scabblers	vfsl	---	6	5.0	0-1 1-2 2-3 3-4 4-5	0.16 0.09 0.06 0.06 0.06	(.30)	(.35)	0.49	2	12.01

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
seaquest	sil	---	24	5.0	0-1	0.19	(.15)	(.25)	0.32	5	2.05
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.18					
seastrand (dr.)	peat	W	30	5.0	0-1	0.35	(.30)	(.35)	0.00	3	0.00
					1-2	0.35					
					2-3	0.20					
					3-4	0.06					
					4-5	0.06					
seattle (dr.)	muck	W	30	5.0	0-1	0.37	(.30)	(.35)	0.00	5	0.00
					1-2	0.37					
					2-3	0.37					
					3-4	0.37					
					4-5	0.37					
sedrowoolley (dr.)	sil	W	14	5.0	0-1	0.20	(.25)	(.30)	0.43	5	3.70
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
segidal	sl	W	12	2.5	0-1	0.13	(.40)	(.50)	0.37	2	5.12
					1-2	0.13					
					2-2.5	0.13					
sehome	l	W	22	2.0	0-1	0.30	(.30)	(.35)	0.24	2	2.88
					1-2	0.20					
sehome	gr-l	W	30	2.0	0-1	0.25	(.30)	(.35)	0.20	2	2.00
					1-2	0.20					
selah	l	S	8	3.0	0-1	0.20	0.20	(.25)	0.49	2	12.01
					1-2	0.20					
					2-3	0.20					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
semiahmoo (dr.)	muck	W	30	5.0	0-1	0.27	(.30)	(.35)	0.00	5	0.00
					1-2	0.27					
					2-3	0.27					
					3-4	0.27					
					4-5	0.20					
sequim	grv-sl	---	26	5.0	0-1	0.05	(1.)	(1.0)	0.10	2	0.50
					1-2	0.03					
					2-3	0.01					
					3-4	0.01					
					4-5	0.01					
shalcar	muck	W	32	5.0	0-1	0.35	(.15)	(.25)	0.00	5	0.00
					1-2	0.13					
					2-3	0.09					
					3-4	0.09					
					4-5	0.09					
shalcar (var.)	muck	W	30	5.0	0-1	0.32	(.30)	(.35)	0.00	5	0.00
					1-2	0.32					
					2-3	0.19					
					3-4	0.06					
					4-5	0.06					
shano *	sil	S	14	5.0	0-1	0.22	(.25)	0.40	0.43	5	3.70
					1-2	0.23					
					2-3	0.24					
					3-4	0.26					
					4-5	0.24					
shano *	vfsl	S	6	5.0	0-1	0.18	(.25)	(.30)	0.55	5	6.05
					1-2	0.20					
					2-3	0.24					
					3-4	0.27					
					4-5	0.28					
shelton	gr-sl & l	W	26	2.0	0-1	0.08	(1.)	(1.0)	0.15	2	1.13
					1-2	0.07					
si	sil	W	22	5.0	0-1	0.17	(.30)	(.35)	0.37	5	2.74
					1-2	0.17					
					2-3	0.17					
					3-4	0.12					
					4-5	0.17					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CLI
sifton	gr-l&sil	---	30	5.0	0-1	0.17	(.35)	(.40)	0.20	2	2.00
					1-2	0.08					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
sifton	l	---	14	5.0	0-1	0.18	(.30)	(.35)	0.32	2	5.12
					1-2	0.08					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
siler	fsl	---	28	5.0	0-1	0.16	(.50)	(.60)	0.28	5	1.57
					1-2	0.10					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
siler	sil	---	22	5.0	0-1	0.19	(.30)	(.35)	0.32	5	2.05
					1-2	0.10					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
simcoe	sil	---	8	3.0	0-1	0.19	(.15)	(.25)	0.43	2	9.25
					1-2	0.18					
					2-3	0.18					
sinclair	gr-sl	W	26	2.0	0-1	0.09	().8)	(.80)	0.15	2	1.13
					1-2	0.09					
sinclair	grv-sl	W	26	2.0	0-1	0.08	()1.)	(1.0)	0.10	2	0.50
					1-2	0.09					
sinclair	gr-l	W	26	2.0	0-1	0.12	().8)	(.80)	0.20	2	2.00
					1-2	0.09					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
sinloc	sil	W,S	15	5.0	0-1	0.19	(.15)	(.25)	0.43	5	3.70
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
sinloc	fsl	W,S	23	5.0	0-1	0.18	(.15)	(.25)	0.37	5	2.74
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
skagit (dr.)	sil	W	14	5.0	0-1	0.20	(.25)	(.30)	0.43	5	3.70
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
skaha	ls	---	26	5.0	0-1	0.06	(.1.)	0.70	0.20	5	0.80
					1-2	0.05					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
skamo	sil	W	30	5.0	0-1	0.21	(.30)	(.35)	0.28	5	1.57
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
skipopa	sil	W	16	5.0	0-1	0.35	(.15)	(.25)	0.32	2	5.12
					1-2	0.32					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
snohomish	sil	W	16	5.0	0-1	0.20	(.15)	(.25)	0.37	3	4.56
					1-2	0.20					
					2-3	0.30					
					3-4	0.35					
					4-5	0.35					
snohomish	sicl	W	24	5.0	0-1	0.20	(.15)	(.25)	0.32	3	3.41
					1-2	0.20					
					2-3	0.30					
					3-4	0.35					
					4-5	0.35					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
snow	sil	---	22	5.0	0-1	0.19	(.25)	(.30)	0.37	5	2.74
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
sohappy	sil	S	6	4.0	0-1	0.19	(.25)	(.30)	0.64	3	13.65
					1-2	0.19					
					2-3	0.19					
					3-4	0.17					
spana	l, sil	W	22	5.0	0-1	0.18	(.25)	(.30)	0.37	5	2.74
					1-2	0.15					
					2-3	0.08					
					3-4	0.06					
					4-5	0.06					
spana	gr-l	W	26	5.0	0-1	0.14	().5)	(.80)	0.24	5	1.15
					1-2	0.15					
					2-3	0.08					
					3-4	0.06					
					4-5	0.06					
spanaway	gr&grv-sl	---	26	5.0	0-1	0.12	().8)	(.80)	0.15	2	1.13
					1-2	0.07					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
springdale	gr-sl&ls	---	26	5.0	0-1	0.10	().8)	(.80)	0.15	2	1.13
					1-2	0.03					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
springdale	sl	---	18	5.0	0-1	0.11	().5)	(.80)	0.24	2	2.88
					1-2	0.03					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					
springdale	gr-l	---	30	5.0	0-1	0.12	(.35)	(.40)	0.20	2	2.00
					1-2	0.03					
					2-3	0.03					
					3-4	0.03					
					4-5	0.03					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
stanfield (reclm.)	sil	S	7	2.5	0-1 1-2 2-2.5	0.25 0.25 0.25	(.15)	(.25)	0.55	2	15.13
starbuck	vfsl,sil	---	8	1.5	0-1 1-1.5	0.18 0.13	(.15)	(.25)	0.43	1	18.49
stevens	sil,l	---	22	5.0	0-1 1-2 2-3 3-4 4-5	0.20 0.18 0.15 0.16 0.16	(.25)	(.30)	0.37	5	2.74
stevens	gr-sil&l	---	30	5.0	0-1 1-2 2-3 3-4 4-5	0.18 0.16 0.15 0.16 0.16	(.30)	(.35)	0.24	5	1.15
strat	cbv-sil&l	---	20	5.0	0-1 1-2 2-3 3-4 4-5	0.10 0.09 0.04 0.04 0.04	(.40)	(.50)	0.24	2	2.88
strat	gr-l	---	30	5.0	0-1 1-2 2-3 3-4 4-5	0.14 0.09 0.04 0.04 0.04	(.35)	(.40)	0.20	2	2.00
stratford	sil,l	S	6	5.0	0-1 1-2 2-3 3-4 4-5	0.17 0.12 0.06 0.03 0.03	(.30)	(.35)	0.43	2	9.25
stratford	gr-sil&l	S	12	5.0	0-1 1-2 2-3 3-4 4-5	0.14 0.12 0.06 0.03 0.03	(.40)	(.50)	0.28		

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AHC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
sultan	sil	W	24	5.0	0-1	0.19	(.15)	(.25)	0.37	5	2.74
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.15					
sultan (var.)	sil	---	14	5.0	0-1	0.19	(.25)	(.30)	0.37	3	4.56
					1-2	0.18					
					2-3	0.08					
					3-4	0.07					
					4-5	0.04					
sumas	sil	---	6	5.0	0-1	0.20	(.25)	(.30)	0.37	2	6.85
					1-2	0.19					
					2-3	0.09					
					3-4	0.07					
					4-5	0.07					
supplee	vfsl	---	6	5.0	0-1	0.19	(.25)	(.30)	0.49	2	12.01
					1-2	0.18					
					2-3	0.12					
					3-4	0.05					
					4-5	0.05					
supplee	fsl	---	12	5.0	0-1	0.17	(.40)	(.50)	0.32	2	5.12
					1-2	0.18					
					2-3	0.12					
					3-4	0.05					
					4-5	0.05					
supplee	sl	---	20	5.0	0-1	0.15	(.40)	(.50)	0.24	2	2.88
					1-2	0.18					
					2-3	0.12					
					3-4	0.05					
					4-5	0.05					
swauk	l	---	22	2.5	0-1	0.17	(.30)	(.35)	0.28	3	2.61
					1-2	0.17					
					2-2.5	0.16					
synarep	sil	S	15	5.0	0-1	0.20	(.15)	(.25)	0.43	5	3.70
					1-2	0.20					
					2-3	0.20					
					3-4	0.19					
					4-5	0.14					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
tacoma	sil,l	S	23	5.0	0-1	0.18	(.10)	(.20)	0.37	5	2.74
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
taneum	l	---	22	5.0	0-1	0.16	(.30)	(.35)	0.32	5	2.05
					1-2	0.19					
					2-3	0.20					
					3-4	0.17					
					4-5	0.13					
tanwax (dr.)	muck	W	32	5.0	0-1	0.27	(.10)	(.20)	0.00	5	0.00
					1-2	0.27					
					2-3	0.27					
					3-4	0.27					
					4-5	0.27					
tanwax (var.)	peat	W	32	5.0	0-1	0.27	(.10)	(.20)	0.00	5	0.00
					1-2	0.20					
					2-3	0.12					
					3-4	0.12					
					4-5	0.12					
taunton	fsl	S	12	2.0	0-1	0.16	(.50)	0.50	0.32	2	5.12
					1-2	0.14					
taunton	lfs	S	20	2.0	0-1	0.14	(.50)	(.60)	0.24	2	2.88
					1-2	0.14					
taunton	sil	S	6	2.0	0-1	0.18	(.25)	0.35	0.43	2	9.25
					1-2	0.14					
teanaway	l	---	22	5.0	0-1	0.18	(.25)	(.30)	0.37	5	2.74
					1-2	0.16					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
tenino	gr-l	---	30	3.0	0-1	0.13	(.35)	(.40)	0.20	2	2.00
					1-2	0.13					
					2-3	0.13					
terlan	gr-l,cb-l	S	14	2.0	0-1	0.14	(.35)	(.40)	0.20	1	4.00
					1-2	0.13					
thatuna	sil	---	22	5.0	0-1	0.20	(.30)	(.35)	0.32	5	2.05
					1-2	0.20					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
thornton	sil	W	24	5.0	0-1	0.20	(.15)	(.25)	0.37	5	2.74
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
thowson	fsl	---	20	5.0	0-1	0.12	(.40)	(.50)	0.32	3	3.41
					1-2	0.09					
					2-3	0.09					
					3-4	0.06					
					4-5	0.03					
tieton	l	---	14	4.0	0-1	0.17	(.30)	(.35)	0.37	3	4.56
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
tieton	fsl	---	12	4.0	0-1	0.15	(.40)	(.50)	0.37	3	4.56
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
tilma	sil	W	24	5.0	0-1	0.19	(.15)	(.25)	0.32	3	3.41
					1-2	0.19					
					2-3	0.15					
					3-4	0.17					
					4-5	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
timmerman *	ls	S	26	5.0	0-1	0.13	().8)	0.50	0.17	3	0.96
					1-2	0.18					
					2-3	0.11					
					3-4	0.08					
					4-5	0.09					
timmerman *	sl,cosl,fsl	S	28	5.0	0-1	0.16	0.20	0.40	0.24	3	1.92
					1-2	0.11					
					2-3	0.07					
					3-4	0.07					
					4-5	0.09					
timmerman	gr-cosl	S	26	5.0	0-1	0.12	().8)	(.80)	0.15	3	0.75
					1-2	0.08					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
tisch (dr.)	si, sil	W	32	5.0	0-1	0.30	(.15)	(.25)	0.28	5	1.57
					1-2	0.30					
					2-3	0.30					
					3-4	0.30					
					4-5	0.32					
tokul	gr-l & sil	W	30	2.5	0-1	0.20	(.30)	(.35)	0.20	2	2.00
					1-2	0.19					
					2-2.5	0.15					
tokul	sil	W	14	2.5	0-1	0.23	(.30)	(.35)	0.32	2	5.12
					1-2	0.19					
					2-2.5	0.15					
tonasket	sil	S	13	5.0	0-1	0.17	(.25)	(.30)	0.43	5	3.70
					1-2	0.15					
					2-3	0.18					
					3-4	0.20					
					4-5	0.20					
toppenish	sil	W,S	15	5.0	0-1	0.20	(.15)	(.25)	0.37	3	4.56
					1-2	0.20					
					2-3	0.18					
					3-4	0.11					
					4-5	0.05					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
toppenish	sicl	W,S	23	5.0	0-1	0.20	(.10)	(.20)	0.28	3	2.61
					1-2	0.20					
					2-3	0.18					
					3-4	0.11					
					4-5	0.05					
torboy	sl	---	26	5.0	0-1	0.12	().8)	(.80)	0.20	2	2.00
					1-2	0.08					
					2-3	0.06					
					3-4	0.05					
					4-5	0.05					
torboy	fsl	---	18	5.0	0-1	0.13	().5)	(.80)	0.24	2	2.88
					1-2	0.08					
					2-3	0.06					
					3-4	0.05					
					4-5	0.05					
touchet	sil	---	22	5.0	0-1	0.19	(.25)	(.30)	0.37	5	2.74
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
touchet	gr-sil	---	28	5.0	0-1	0.17	(.40)	(.50)	0.24	5	1.15
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
touhey	l	---	6	5.0	0-1	0.17	(.30)	(.35)	0.37	2	6.85
					1-2	0.13					
					2-3	0.08					
					3-4	0.10					
					4-5	0.10					
touhey	fsl	---	14	5.0	0-1	0.15	(.30)	(.35)	0.32	2	5.12
					1-2	0.13					
					2-3	0.08					
					3-4	0.10					
					4-5	0.10					
touhey	vfsl	---	6	5.0	0-1	0.15	(.30)	(.35)	0.49	2	12.01
					1-2	0.13					
					2-3	0.08					
					3-4	0.10					
					4-5	0.10					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
townsend	gr-l	W	30	3.0	0-1 1-2 2-3	0.11 0.18 0.07	(.35)	(.40)	0.20	3	1.33
townsend	fsl	W	20	3.0	0-1 1-2 2-3	0.11 0.18 0.07	(.40)	(.50)	0.32	3	3.41
townsend	sl	W	28	3.0	0-1 1-2 2-3	0.10 0.18 0.07	(.40)	(.50)	0.24	3	1.92
track	l	W,S	21	5.0	0-1 1-2 2-3 3-4 4-5	0.15 0.09 0.06 0.02 0.02	(.30)	(.35)	0.24	2	2.88
track	sicl	W,S	31	5.0	0-1 1-2 2-3 3-4 4-5	0.18 0.10 0.06 0.02 0.02	(.10)	(.20)	0.20	2	2.00
track	gr-l	W,S	29	5.0	0-1 1-2 2-3 3-4 4-5	0.13 0.09 0.06 0.02 0.02	(.35)	(.40)	0.20	2	2.00
tromp	l	W	14	5.0	0-1 1-2 2-3 3-4 4-5	0.24 0.16 0.12 0.12 0.12	(.30)	(.35)	0.28	2	3.92
trouter	l	---	14	2.5	0-1 1-2 2-2.5	0.22 0.22 0.22	(.30)	(.35)	0.32	2	5.12

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
tucannon	sil	---	6	2.5	0-1 1-2 2-2.5	0.20 0.20 0.19	(.25)	(.30)	0.37	2	6.85
tukey	gr-sil	W	30	3.0	0-1 1-2 2-3	0.13 0.10 0.10	(.30)	(.35)	0.24	3	1.92
tukey	gr-l	W	30	3.0	0-1 1-2 2-3	0.10 0.10 0.10	(.35)	(.40)	0.20	3	1.33
tukwila	muck	W	30	5.0	0-1 1-2 2-3 3-4 4-5	0.37 0.37 0.37 0.37 0.37	(.30)	(.35)	0.00	5	0.00

Series	Texture	Limits	Management Group	Depth Ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T
uhlig	sil, l	---	22	5.0	0-1	0.20	(.25)	(.30)	0.37	5
					1-2	0.18				
					2-3	0.17				
					3-4	0.16				
					4-5	0.15				
uhlig (var.)	sil	---	14	3.0	0-1	0.20	(.25)	(.30)	0.37	3
					1-2	0.17				
					2-3	0.15				
umapine	sil	W,S	23	5.0	0-1	0.19	(.15)	0.28	0.37	5
					1-2	0.19				
					2-3	0.19				
					3-4	0.19				
					4-5	0.19				
umapine	vfsl	W,S	15	5.0	0-1	0.18	(.15)	(.25)	0.49	5
					1-2	0.19				
					2-3	0.19				
					3-4	0.19				
					4-5	0.19				
umapine(var)	sil	S	21	5.0	0-1	0.17	(.25)	(.30)	0.37	5
					1-2	0.15				
					2-3	0.13				
					3-4	0.13				
					4-5	0.13				
umapine(var)	vfsl	S	13	5.0	0-1	0.16	(.25)	(.30)	0.43	5
					1-2	0.15				
					2-3	0.13				
					3-4	0.13				
					4-5	0.13				
uncas	muck	W	30	5.0						

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
vanzandt	grv-l	W	30	2.5	0-1 1-2 2-2.5	0.17 0.17 0.12	(.35)	(.40)	0.15	2	1.13
vanzandt	gr-l	W	30	2.5	0-1 1-2 2-2.5	0.22 0.17 0.12	(.30)	(.35)	0.20	2	2.00
varelum	sil,l	---	14	4.0	0-1 1-2 2-3 3-4	0.18 0.18 0.18 0.18	(.25)	(.30)	0.37	3	4.56
volperie	sl	---	18	3.0	0-1 1-2 2-3	0.10 0.08 0.07	().5)	(.80)	0.24	?	2.88
volperie (var.)	sl	---	28	5.0	0-1 1-2 2-3 3-4 4-5	0.15 0.17 0.17 0.17 0.17	(.50)	(.60)	0.28	5	1.57

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
wadams	sl	--	26	5.0	0-1	0.11	().8)	(.80)	0.20	5	0.80
					1-2	0.10					
					2-3	0.09					
					3-4	0.06					
					4-5	0.06					
wadams	gr-sl	---	26	5.0	0-1	0.10	().8)	(.80)	0.15	5	0.45
					1-2	0.10					
					2-3	0.09					
					3-4	0.06					
					4-5	0.06					
wadell	gr-l	---	28	5.0	0-1	0.12	(.40)	(.50)	0.24	5	1.15
					1-2	0.14					
					2-3	0.14					
					3-4	0.10					
					4-5	0.05					
wadell	l	---	20	5.0	0-1	0.16	(.40)	(.50)	0.32	5	2.05
					1-2	0.14					
					2-3	0.14					
					3-4	0.10					
					4-5	0.05					
waha	sil	---	16	2.5	0-1	0.19	(.15)	(.25)	0.32	2	5.12
					1-2	0.19					
					2-2.5	0.07					
waha	sicl	---	16	2.5	0-1	0.19	(.10)	(.20)	0.32	2	5.12
					1-2	0.19					
					2-2.5	0.07					
wahluke	fsl	S	21	5.0	0-1	0.12	(.30)	(.35)	0.32	5	2.05
					1-2	0.14					
					2-3	0.06					
					3-4	0.11					
					4-5	0.19					
wahluke	vfsl	S	13	5.0	0-1	0.15	(.25)	(.30)	0.49	5	4.80
					1-2	0.14					
					2-3	0.06					
					3-4	0.11					
					4-5	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
wahtum	l,sil	S	23	5.0	0-1	0.19	(.15)	(.25)	0.37	4	3.42
					1-2	0.16					
					2-3	0.12					
					3-4	0.11					
					4-5	0.03					
wahtum(var)	l	S	23	5.0	0-1	0.18	(.15)	(.25)	0.37	5	2.74
					1-2	0.18					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					
waits	l, sil	S	14	5.0	0-1	0.18	(.25)	(.30)	0.43	5	3.70
					1-2	0.14					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
waits	vfsl	S	14	5.0	0-1	0.18	(.25)	(.30)	0.49	5	4.80
					1-2	0.14					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
walla walla	sil	S	14	5.0	0-1	0.18	(.25)	0.26	0.43	5	3.70
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.17					
walla walla	vfsl	S	14	5.0	0-1	0.15	(.30)	(.35)	0.49	5	4.80
					1-2	0.18					
					2-3	0.18					
					3-4	0.18					
					4-5	0.17					
wamba (dr.)	sil	W,S	7	5.0	0-1	0.19	(.15)	(.25)	0.43	2	9.25
					1-2	0.16					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
wanser	fs	W,S	25	5.0	0-1	0.08	(>1.)	(1.0)	0.10	5	0.20
					1-2	0.07					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
wanser	lfs	W,S	25	5.0	0-1	0.08	()1.)	(1.0)	0.28	5	1.57
					1-2	0.07					
					2-3	0.07					
					3-4	0.07					
					4-5	0.07					
wapato (dr.)	sicl	W	24	5.0	0-1	0.20	(.10)	(.20)	0.32	5	2.05
					1-2	0.17					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
wapato (dr.)	sil	W	24	5.0	0-1	0.17	(.10)	(.20)	0.32	5	2.05
					1-2	0.17					
					2-3	0.16					
					3-4	0.16					
					4-5	0.16					
warden	sil	S	14	5.0	0-1	0.19	0.29	0.30	0.43	5	3.70
					1-2	0.18					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
warden *	fsl,vfsl	S	14	5.0	0-1	0.16	(.30)	(.35)	0.43	5	3.70
					1-2	0.18					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
warden	lfs	S	20	5.0	0-1	0.13	(.50)	(.60)	0.32	5	2.05
					1-2	0.18					
					2-3	0.20					
					3-4	0.20					
					4-5	0.20					
washougal	l	---	20	5.0	0-1	0.13	(.50)	(.60)	0.32	5	
					1-2	0.09					
					2-3	0.06					
					3-4	0.03					
					4-5	0.03					
washougal	gr-l	---	28	5.0	0-1	0.12	(.50)	(.60)	0.28	5	1.57
					1-2	0.09					
					2-3	0.06					
					3-4	0.03					
					4-5	0.03					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
weirman	fsl,sl	---	10	5.0	0-1	0.11	().5)	(.80)	0.28	2	3.92
					1-2	0.06					
					2-3	0.01					
					3-4	0.01					
					4-5	0.01					
weirman	gr-sil to sl	---	26	5.0	0-1	0.09	().8)	(.80)	0.17	2	1.45
					1-2	0.06					
					2-3	0.01					
					3-4	0.01					
					4-5	0.01					
weirman	sil	---	6	5.0	0-1	0.16	(.30)	(.35)	0.43	2	9.25
					1-2	0.06					
					2-3	0.01					
					3-4	0.01					
					4-5	0.01					
wellman	gr-sil	---	20	5.0	0-1	0.15	(.40)	(.50)	0.24	2	2.88
					1-2	0.12					
					2-3	0.03					
					3-4	0.01					
					4-5	0.01					
wenas	sil	W,S	23	5.0	0-1	0.20	(.15)	(.25)	0.37	5	2.74
					1-2	0.20					
					2-3	0.20					
					3-4	0.17					
					4-5	0.06					
wenatchee	sil	---	16	5.0	0-1	0.19	(.15)	(.25)	0.43	5	3.70
					1-2	0.15					
					2-3	0.15					
					3-4	0.15					
					4-5	0.15					
wethey (dr.)	ls, s	---	26	5.0	0-1	0.07	()1.)	(1.0)	0.20	5	0.80
					1-2	0.07					
					2-3	0.09					
					3-4	0.10					
					4-5	0.13					
whatcom	sil	W	24	5.0	0-1	0.33	(.15)	(.25)	0.32	5	2.05
					1-2	0.21					
					2-3	0.17					
					3-4	0.16					
					4-5	0.18					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
whidbey	gr-sl	---	30	5.0	0-1	0.07	(.35)	(.40)	0.15	2	1.13
					1-2	0.06					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
whitehorn	sil, l	W	24	5.0	0-1	0.33	(.15)	(.25)	0.37	5	2.74
					1-2	0.16					
					2-3	0.12					
					3-4	0.12					
					4-5	0.12					
white swan	sil	S	13	5.0	0-1	0.16	(.25)	(.30)	0.43	5	3.70
					1-2	0.15					
					2-3	0.14					
					3-4	0.14					
					4-5	0.14					
wickersham	sil	---	6	5.0	0-1	0.22	(.25)	(.30)	0.37	2	6.85
					1-2	0.17					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
wiehl	sil	S	6	2.0	0-1	0.17	(.30)	(.35)	0.49	3	8.00
					1-2	0.15					
wiehl	fsl,vfsl	S	4	2.0	0-1	0.16	(.40)	(.50)	0.49	3	8.00
					1-2	0.15					
wiehl(var)	sicl	S	24	5.0	0-1	0.17	(.10)	(.20)	0.32	5	2.05
					1-2	0.17					
					2-3	0.17					
					3-4	0.17					
					4-5	0.17					
willis	sil	S	6	2.5	0-1	0.20	0.53	0.33	0.43	2	9.25
					1-2	0.19					
					2-2.5	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
willis	fsl,vfsl	S	6	2.5	0-1	0.16	(.30)	(.35)	0.49	2	12.01
					1-2	0.19					
					2-2.5	0.19					
winchester	cos,s	S	26	5.0	0-1	0.06	()1.)	1.00	0.10	5	0.20
					1-2	0.06					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
winchester	lcos	S	26	5.0	0-1	0.08	()1.)	(1.0)	0.15	5	0.45
					1-2	0.06					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
winchester	lfs	S	26	5.0	0-1	0.09	().8)	(.80)	0.20	5	0.80
					1-2	0.06					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
wind river	sl	---	26	5.0	0-1	0.11	().5)	(.80)	0.24	3	1.92
					1-2	0.10					
					2-3	0.08					
					3-4	0.08					
					4-5	0.08					
wind river	gr-l	---	26	5.0	0-1	0.12	().8)	(.80)	0.20	3	1.33
					1-2	0.10					
					2-3	0.08					
					3-4	0.08					
					4-5	0.08					
winston	l, sil	---	22	5.0	0-1	0.29	(.30)	(.35)	0.24	2	2.88
					1-2	0.25					
					2-3	0.20					
					3-4	0.04					
					4-5	0.04					
winston	gr-l & sil	---	30	5.0	0-1	0.26	(.30)	(.35)	0.17	2	1.45
					1-2	0.25					
					2-3	0.20					
					3-4	0.04					
					4-5	0.04					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
winthrop	gr-ls	---	26	5.0	0-1	0.06	(1.)	(1.0)	0.15	5	0.45
					1-2	0.03					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
wintoner	sil	---	24	5.0	0-1	0.18	(.15)	(.25)	0.37	5	2.74
					1-2	0.18					
					2-3	0.16					
					3-4	0.18					
					4-5	0.18					
wiseman	cn-sl	---	22	5.0	0-1	0.09	(.35)	(.40)	0.15	1	2.25
					1-2	0.04					
					2-3	0.04					
					3-4	0.04					
					4-5	0.04					
wishkan (dr.)	sicl	---	32	5.0	0-1	0.19	(.15)	(.25)	0.28	5	1.57
					1-2	0.18					
					2-3	0.18					
					3-4	0.17					
					4-5	0.16					
woldale (dr.)	cl	---	30	5.0	0-1	0.16	(.35)	(.40)	0.17	5	0.58
					1-2	0.14					
					2-3	0.11					
					3-4	0.08					
					4-5	0.08					
wolfeson	vfsl	---	20	5.0	0-1	0.14	(.50)	(.60)	0.37	5	2.74
					1-2	0.14					
					2-3	0.14					
					3-4	0.20					
					4-5	0.17					
woodinville (dr.)	l, sil	W	24	5.0	0-1	0.22	(.15)	(.25)	0.37	5	2.7
					1-2	0.23					
					2-3	0.24					
					3-4	0.24					
					4-5	0.24					
woodlyn	l	W	14	1.0	0-1	0.32	(.30)	(.35)	0.20	1	4.00

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
yacolt	l	---	20	5.0	0-1	0.14	(.40)	(.50)	0.32	5	2.05
					1-2	0.13					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
yacolt	gr-l	---	28	5.0	0-1	0.13	(.40)	(.50)	0.24	5	1.15
					1-2	0.13					
					2-3	0.11					
					3-4	0.11					
					4-5	0.11					
yakima	sil	---	6	5.0	0-1	0.17	(.30)	(.35)	0.37	2	6.85
					1-2	0.14					
					2-3	0.09					
					3-4	0.03					
					4-5	0.03					
yakima	gr-l&sil	---	20	5.0	0-1	0.14	(.40)	(.50)	0.24	2	2.88
					1-2	0.14					
					2-3	0.09					
					3-4	0.03					
					4-5	0.03					
yakima	cb-l&sil	---	12	5.0	0-1	0.14	(.40)	(.50)	0.28	2	3.92
					1-2	0.14					
					2-3	0.09					
					3-4	0.03					
					4-5	0.03					
yakima(var)	sil	---	6	5.0	0-1	0.18	(.25)	(.30)	0.37	2	6.85
					1-2	0.18					
					2-3	0.13					
					3-4	0.03					
					4-5	0.03					
yaquina (dr.)	lfs, fs	W	26	5.0	0-1	0.07	(>1.)	(1.0)	0.17	5	0.58
					1-2	0.06					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
yeary	gr-l	W	22	3.0	0-1	0.12	(.30)	(.35)	0.24	2	2.88
					1-2	0.12					
					2-3	0.12					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
yelm	fsl	W	22	5.0	0-1	0.27	(.35)	(.40)	0.32	4	2.56
					1-2	0.20					
					2-3	0.20					
					3-4	0.18					
					4-5	0.06					
yelm	l	W	22	5.0	0-1	0.30	(.30)	(.35)	0.32	4	2.56
					1-2	0.20					
					2-3	0.20					
					3-4	0.18					
					4-5	0.06					
yost	c	S	31	5.0	0-1	0.19	(.10)	(.20)	0.20	5	0.80
					1-2	0.19					
					2-3	0.19					
					3-4	0.19					
					4-5	0.19					

Series	Texture	Limits	Management Group	Depth ft.	Increment ft.	AWC in/in	Furrow I'f	Sprinkler iph	'K'	T	CEI
zeb	st-sl	W	26	5.0	0-1	0.09	().8)	(.80)	0.17	5	0.58
					1-2	0.07					
					2-3	0.06					
					3-4	0.06					
					4-5	0.06					
zen	sil	S	6	2.0	0-1	0.18	(.25)	(.30)	0.43	2	9.25
					1-2	0.18					
zillah	sil	S	15	5.0	0-1	0.20	(.15)	(.25)	0.37	3	4.56
					1-2	0.20					
					2-3	0.19					
					3-4	0.19					
					4-5	0.10					
'illah	sl	S	25	5.0	0-1	0.12	().8)	(.80)	0.20	3	1.33
					1-2	0.15					
					2-3	0.19					
					3-4	0.19					
					4-5	0.10					

APPENDIX B - CLIMATIC STATIONS FOR CONSUMPTIVE USE

LOCATION	PAGE NO.
ABERDEEN	B- 1
ANACORTES	B- 3
BATTLE GROUND	B- 5
BELLINGHAM	B- 7
BICKLETON	B- 9
BLAINE	B-11
BREMERTON	B-13
BUCKLEY	B-15
CENTRALIA	B-17
CHELAN	B-19
CHEWALAH	B-21
CHIEF JOE DAM	B-23
CLE ELUM	B-25
CLEARBROOK	B-27
COLFAX	B-29
COLVILLE	B-31
CONCONULLY*	B-33
CONCRETE	B-35
CONNELL*	B-37
COULEE DAM	B-39
COUPEVILLE	B-41
DALLESPORT	B-43
DAVENPORT	B-45
DAYTON	B-47

APPENDIX B - CLIMATIC STATIONS FOR CONSUMPTIVE USE

LOCATION	PAGE NO.
ELLENSBURG*	B-49
ELMA	B-51
ELTOPIA*	B-53
EPHRATA	B-55
EVERETT	B-57
GOLDENDALE*	B-59
GRAPEVIEW	B-61
HANFORD	B-63
HATTON	B-65
HOQUIAM	B-67
KAHLOTUS**	B-69
KENNEWICK	B-71
KENT	B-73
LACROSSE	B-75
LAURIER	B-77
LEAVENWORTH*	B-79
LIND	B-81
LONGVIEW	B-83
MC MILLIN	B-85
MC NARY DAM*	B-87
METHOW*	B-89
MONROE	B-91
MOSES LAKE	B-93
MOXEE CITY	B-95
NESPELEM*	B-97

APPENDIX B - CLIMATIC STATIONS FOR CONSUMPTIVE USE

LOCATION	PAGE NO.
NEWPORT	B- 99
NORTHPORT	B-101
OAKVILLE	B-103
ODESSA	B-105
OLGA	B-107
OLYMPIA	B-109
OMAK	B-111
OTHELLO	B-113
POMEROY	B-115
PORT ANGELES	B-117
PRIEST RAPIDS*	B-119
PROSSER	B-121
PULLMAN	B-123
PUYALLUP	B-125
QUICENE	B-127
QUINCY	B-129
REPUBLIC	B-131
RICHLAND	B-133
RITZVILLE	B-135
ROSALIA	B-137
SEATTLE U OF W	B-139
SEATTLE-TACOMA	B-141
SEDRO WOOLEY	B-143
SEQUIM	B-145

APPENDIX B - CLIMATIC STATIONS FOR CONSUMPTIVE USE

LOCATION	PAGE NO.
SHELTON	B-147
SMYRNA*	B-149
SNOQUALMIE FALLS	B-151
SPOKANE	B-153
SPRAGUE	B-155
SUNNYSIDE	B-157
TACOMA	B-159
VANCOUVER	B-161
WALLA WALLA	B-163
WAPATO	B-165
WATERVILLE	B-167
WELLPINIT*	B-169
WENATCHEE	B-171
WILBUR	B-173
WILSON CREEK	B-175
WINTHROP	B-177
YAKIMA	B-179

Locations identified with an "*" were developed from weather records from 1975-1984.

**Kahlotus data was developed using historic precipitation data and Connell temperature data.

ABERDEEN 46.97 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	39.9	43.0	44.0	47.9	52.9	57.9	60.5	60.9	59.3	52.8	45.4	41.7	
TOTAL PRECIPITATION (IN)	13.10	9.75	9.06	5.51	3.35	2.50	1.27	2.12	3.66	7.29	10.96	13.77	82.34
EFFECTIVE PRECIP (IN)	.11	.58	1.31	2.12	2.18	1.75	.91	1.44	2.14	1.44	.36	.05	14.39

ALFALFA BEG 5/12 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.29	2.44	1.20	.00	.00	.00	.00	4.93
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/12 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.83	3.03	1.66	.35	.02	.00	.00	6.90
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/12 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.65	2.83	1.51	.23	.00	.00	.00	6.22
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/10 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.18	3.82	2.29	.73	.00	.00	.00	9.01
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/10 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.11	2.63	1.35	.00	.00	.00	.00	5.10
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/10 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.24	1.04	.00	.00	.00	.00	3.29
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/17 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.20	2.54	3.82	2.13	.00	.00	.00	.00	9.68
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/17 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.04	.27	.00	.00	.00	.00	.00	.31
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

ABERDEEN

GREEN BEANS	BEG 7/20	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.22	.42	.18	.00	.00	.00	.82
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.39	.48	.74	.74	.00	.00	

CARROTS	BEG 3/17	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	.73	.00	.00	.00	.00	.00	.00	1.89
AV. PAN FACTOR	.00	.00	.55	.64	.83	.75	.00	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.66	1.81	.60	.00	.00	.00	4.07
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.52	.84	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.21	1.97	.00	.00	.00	.00	4.18
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.63	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/17	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	00	.00	.98	.14	.00	.00	.00	.00	.00	.00	1.12
AV. PAN FACTOR	.00	.00	.55	.62	.79	.71	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/20	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.22	.24	.00	.00	.00	.00	.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.39	.43	.66	.72	.68	.00	

DRY ONION	BEG 3/17	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.87	1.65	2.63	.16	.00	.00	.00	.00	5.31
AV. PAN FACTOR	.00	.00	.55	.66	.76	.76	.72	.63	.00	.00	.00	.00	

GREEN ONION	BEG 3/17	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.81	.14	.00	.00	.00	.00	.00	.00	.95
AV. PAN FACTOR	.00	.00	.55	.59	.74	.72	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/17	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.52	.77	.00	.00	.00	.00	.00	.00	2.29
AV. PAN FACTOR	.00	.00	.55	.74	.92	.88	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.86	1.95	.54	.00	.00	.00	4.34
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.56	.87	.86	.66	.00	.00	

RADISH	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AV. PAN FACTOR	.00	.00	.57	.63	.00	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AV. PAN FACTOR	.00	.00	.55	.64	.75	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/11		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.24	1.36	.86	.00	.00	.00	.00	.00	.00	2.46
AV. PAN FACTOR	.00	.69	.75	.88	.88	.58	.22	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.42	1.55	.48	.00	.00	.00	3.44
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.47	.77	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/11		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.23	.25	1.13	.00	.00	.00	.00	.00	.00	.00	1.61
AV. PAN FACTOR	.00	1.08	.92	.88	.82	.39	.12	.12	.12	.53	.82	1.50	

SQUASH	BEG 7/20		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.22	.24	.00	.00	.00	.00	.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.39	.43	.66	.68	.00	.00	

ANACORTES 48.52 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	39.1	42.4	44.1	48.8	54.2	58.4	61.6	61.5	58.1	51.5	44.8	41.5	
TOTAL PRECIPITATION (IN)	3.67	2.48	2.11	1.70	1.32	1.25	.96	1.00	1.44	2.44	3.22	4.04	25.63
EFFECTIVE PRECIP (IN)	.22	.69	1.15	1.14	.95	.91	.72	.72	.99	1.20	.40	.12	9.21

ALFALFA BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.09	2.98	3.89	2.93	1.59	.00	.00	.00	12.48
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	3.66	4.70	3.57	2.04	.21	.00	.00	15.59
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.30	3.44	4.43	3.36	1.89	.14	.00	.00	14.55
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLE W/O COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.52	2.75	4.16	3.15	1.59	.00	.00	.00	12.16
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

APPLES W/COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.99	4.12	5.78	4.43	2.50	.07	.00	.00	17.90
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

GRAPES BEG 6/10 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.24	3.62	2.72	1.28	.00	.00	.00	8.85
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.29	4.58	5.78	4.22	1.59	.00	.00	.00	19.46
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.67	1.38	.90	1.00	.22	.00	.00	.00	4.17
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

ANACORTES

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.99	2.38	1.89	.00	.00	.00	5.26
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.81	3.78	1.13	.00	.00	.00	.00	.00	7.72
AV. PAN FACTOR	.00	.00	.00	.45	.74	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.56	2.67	3.76	2.35	.00	.00	.00	9.33
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.56	3.47	4.00	.52	.00	.00	.00	8.55
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.66	2.10	.00	.00	.00	.00	.00	.00	4.76
AV. PAN FACTOR	.00	.00	.00	.45	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.99	1.85	1.70	.06	.00	.00	4.60
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.76	3.44	4.38	2.37	.00	.00	.00	.00	12.94
AV. PAN FACTOR	.00	.00	.00	.48	.73	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.29	2.06	.00	.00	.00	.00	.00	.00	4.36
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	3.51	3.90	.00	.00	.00	.00	.00	.00	7.43
AV. PAN FACTOR	.00	.00	.00	.50	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.56	2.96	3.97	2.26	.00	.00	.00	9.74
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

(WA210-VI-WAIG, OCTOBER 1985)

RADISH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	2.20	.00	.00	.00	.00	.00	.00	.00	2.46
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.70	.00	.00	.00	.00	.00	.00	.00	2.70
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.16	1.88	3.50	2.77	.13	.00	.00	.00	.00	.00	8.44
AV. PAN FACTOR	.00	.65	.71	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.56	2.31	3.38	2.19	.00	.00	.00	8.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.45	.76	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.55	1.90	3.33	.95	.00	.00	.00	.00	.00	.00	6.72
AV. PAN FACTOR	.00	1.00	.91	.88	.85	.42	.12	.12	.12	.54	.79	1.16	

SQUASH	BEG 7/ 9		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.99	1.85	1.70	.00	.00	.00	4.54
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.65	.00	.00	

BATTLE GROUND 45.78 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.3	42.4	44.3	48.6	54.4	59.5	64.0	63.8	60.3	52.6	44.5	40.3	
TOTAL PRECIPITATION (IN)	7.68	5.17	5.10	3.63	2.93	2.34	.72	1.62	2.34	4.56	7.10	8.52	51.71
EFFECTIVE PRECIP (IN)	.09	.63	1.24	2.21	2.03	1.74	.57	1.18	1.66	1.59	.35	.00	13.28

ALFALFA	BEG 5/ 3		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.39	2.28	4.48	2.73	1.55	.00	.00	.00	11.43
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/ 3		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.91	2.99	5.37	3.42	2.11	.03	.00	.00	14.83
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/ 3		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.74	2.75	5.07	3.19	1.92	.00	.00	.00	13.68
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 4/27		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.95	3.46	6.56	4.34	2.68	.00	.00	.00	17.99
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 4/27		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.16	2.04	4.78	2.96	1.55	.00	.00	.00	11.48
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 5/28		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.57	4.18	2.50	1.17	.00	.00	.00	9.42
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/19		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.14	3.93	6.56	4.11	1.55	.00	.00	.00	18.29
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/19		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.63	1.21	.66	.00	.00	.00	.00	2.50
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 6/25	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.52	2.92	.93	.00	.00	.00	6.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.42	.71	.74	.00	.00	.00	

CARROTS	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.08	1.98	.00	.00	.00	.00	.00	.00	4.06
AV. PAN FACTOR	.00	.00	.56	.63	.83	.75	.00	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/28	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.64	4.38	3.88	2.26	.00	.00	.00	11.16
AV. PAN FACTOR	.00	.00	.00	.00	.39	.40	.67	.88	.83	.56	.00	.00	

SWEET CORN	BEG 5/28	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.81	5.33	2.92	.00	.00	.00	.00	9.07
AV. PAN FACTOR	.00	.00	.00	.00	.39	.43	.80	.87	.00	.00	.00	.00	

CRUCIFER	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.89	.49	.00	.00	.00	.00	.00	.00	2.37
AV. PAN FACTOR	.00	.00	.56	.62	.79	.70	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/25	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.29	2.38	1.73	.00	.00	.00	6.40
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.38	.62	.72	.68	.57	.00	

DRY ONION	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.75	2.75	4.82	1.11	.00	.00	.00	.00	10.43
AV. PAN FACTOR	.00	.00	.56	.65	.76	.76	.73	.63	.00	.00	.00	.00	

GREEN ONION	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.64	.50	.00	.00	.00	.00	.00	.00	2.14
AV. PAN FACTOR	.00	.00	.56	.59	.74	.71	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.25	2.54	1.74	.00	.00	.00	.00	.00	.00	4.53
AV. PAN FACTOR	.00	.00	.56	.72	.92	.89	.00	.00	.00	.00	.00	.00	

POTATO	BEG 5/28	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.66	4.93	3.88	2.01	.00	.00	.00	11.48
AV. PAN FACTOR	.00	.00	.00	.00	.39	.41	.74	.88	.78	.59	.00	.00	

RADISH	BEG 3/19		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AV. PAN FACTOR	.00	.00	.57	.63	.00	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/19		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.50	.00	.00	.00	.00	.00	.00	.00	.50
AV. PAN FACTOR	.00	.00	.56	.63	.75	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/12		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.78	2.34	1.83	.10	.00	.00	.00	.00	.00	5.05
AV. PAN FACTOR	.00	.67	.73	.88	.88	.60	.23	.00	.00	.00	.00	.00	

TOMATO	BEG 5/28		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.59	3.80	3.60	2.19	.00	.00	.00	10.17
AV. PAN FACTOR	.00	.00	.00	.00	.39	.39	.59	.83	.82	.50	.00	.00	

WINTER WHEAT	BEG 2/12		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.21	.79	2.11	.00	.17	.00	.00	.00	.00	.00	3.28
AV. PAN FACTOR	.00	1.05	.92	.88	.83	.40	.12	.12	.12	.52	.82	3.96	

SQUASH	BEG 6/25		END 11/12										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.29	2.38	1.63	.00	.00	.00	6.30
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.38	.62	.70	.58	.00	.00	

BELLINGHAM 48.78 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	37.0	41.2	42.9	47.7	53.8	58.6	62.2	61.7	57.7	50.5	43.2	39.6	
TOTAL PRECIPITATION (IN)	4.69	3.49	2.97	2.58	2.08	1.74	1.15	1.45	2.18	3.47	4.61	5.05	35.46
EFFECTIVE PRECIP (IN)	.11	.63	1.31	1.68	1.47	1.26	.86	1.05	1.47	1.32	.32	.03	11.51

ALFALFA	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.68	2.66	3.82	2.62	1.08	.00	.00	.00	10.87
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.99	3.35	4.65	3.27	1.53	.03	.00	.00	13.82
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.89	3.12	4.38	3.05	1.38	.00	.00	.00	12.82
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.54	3.81	5.75	4.13	1.98	.00	.00	.00	16.22
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.07	2.43	4.10	2.84	1.08	.00	.00	.00	10.52
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.94	3.55	2.40	.78	.00	.00	.00	7.67
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.73	4.27	5.75	3.92	1.08	.00	.00	.00	17.76
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.13	1.05	.79	.68	.00	.00	.00	.00	2.64
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.88	2.06	1.38	.00	.00	.00	4.32
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.26	3.47	1.10	.00	.00	.00	.00	.00	6.82
AV. PAN FACTOR	.00	.00	.00	.46	.75	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.25	2.58	3.45	1.83	.00	.00	.00	8.11
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.25	3.39	3.70	.29	.00	.00	.00	7.64
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.10	1.80	.00	.00	.00	.00	.00	.00	3.90
AV. PAN FACTOR	.00	.00	.00	.46	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.88	1.53	1.19	.00	.00	.00	3.59
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.21	3.12	4.32	1.97	.00	.00	.00	.00	11.62
AV. PAN FACTOR	.00	.00	.00	.48	.74	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.75	1.76	.00	.00	.00	.00	.00	.00	3.51
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.95	3.45	.00	.00	.00	.00	.00	.00	6.39
AV. PAN FACTOR	.00	.00	.00	.50	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.25	2.88	3.66	1.75	.00	.00	.00	8.54
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

RADISH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	00	.00	1.65	.00	.00	.00	.00	.00	.00	.00	1.65
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.14	.00	.00	.00	.00	.00	.00	.00	2.14
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.24	2.93	2.45	.10	.00	.00	.00	.00	.00	6.72
AV. PAN FACTOR	.00	.67	.72	.88	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.25	2.22	3.08	1.68	.00	.00	.00	7.23
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.45	.76	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.31	1.25	2.77	.55	.00	.00	.00	.00	.00	.00	4.89
AV. PAN FACTOR	.00	1.05	.93	.88	.85	.42	.12	.12	.12	.55	.85	1.76	

SQUASH	BEG 7/ 9		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.88	1.53	1.19	.00	.00	.00	3.59
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.48	.71	.65	.00	.00	

BICKLETON 46.00 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	28.2	33.8	37.4	44.1	51.8	59.1	67.2	66.1	59.4	48.5	36.3	31.3	
TOTAL PRECIPITATION (IN)	2.60	1.56	1.15	.80	.80	.67	.32	.36	.45	.82	2.11	2.54	14.18
EFFECTIVE PRECIP (IN)	.00	.29	.70	.55	.61	.56	.31	.32	.35	.52	.17	.00	4.40

ALFALFA BEG 5/25 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.70	5.85	8.50	6.82	4.36	.98	.00	.00	27.21
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/25 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.79	6.52	9.43	7.57	4.86	1.15	.00	.00	30.32
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/25 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.75	6.18	8.96	7.20	4.61	1.07	.00	.00	28.77
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/26 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.49	7.19	11.28	9.08	5.60	.98	.00	.00	34.62
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/28 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	3.74	6.52	10.35	8.32	5.11	.80	.00	.00	34.87
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/17 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.60	7.19	11.28	9.08	5.60	.98	.00	.00	35.73
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 5/ 7 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.64	6.52	10.35	8.32	5.11	.80	.00	.00	33.74
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/19 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.26	6.52	10.35	8.32	5.11	.80	.00	.00	32.36
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/26 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.32	5.17	8.96	7.20	4.36	.53	.00	.00	26.54
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

(WA210-VI-WAIG, OCTOBER 1985)

APRICOT W/O COVER	BEG 4/28	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	2.38	4.50	8.03	6.44	3.12	.44	.00	.00	24.94
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/17	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.03	5.17	8.96	7.20	4.36	.53	.00	.00	27.26
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 5/ 7	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.63	4.50	8.03	6.44	3.12	.44	.00	.00	24.17
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/19	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.78	4.50	8.03	6.44	3.12	.44	.00	.00	23.32
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 6	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.10	7.57	6.44	3.87	.53	.00	.00	21.52
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/25	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.31	5.17	8.50	10.96	.00	.00	.00	.00	24.94
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/25	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.31	3.49	9.89	8.70	5.60	1.24	.00	.00	29.23
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.49	7.53	10.82	8.32	3.87	.18	.00	.00	34.20
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.98	2.81	2.47	2.68	1.63	.00	.00	.00	10.58
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	4.19	8.30	4.65	.00	.00	.00	17.14
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.40	.92	.81	.31	.00	.00	

GREEN BEANS	BEG 6/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.39	6.19	4.32	.00	.00	.00	13.90
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.69	.79	.00	.00	.00	

CARROTS	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	4.94	9.87	3.63	.00	.00	.00	.00	19.59
AV. PAN FACTOR	.00	.00	.00	.00	.36	.65	.88	.74	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 6	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.62	5.83	8.05	5.32	.71	.00	.00	21.53
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.53	.89	.91	.66	.00	.00	

SWEET CORN	BEG 6/ 6	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.64	7.67	8.29	.81	.00	.00	.00	18.42
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.86	.00	.00	.00	

CRUCIFER	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	4.75	8.28	.00	.00	.00	.00	.00	14.19
AV. PAN FACTOR	.00	.00	.00	.00	.36	.63	.82	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	3.14	5.03	4.36	.92	.00	.00	13.46
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.31	.57	.76	.74	.00	.00	

DRY ONION	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.26	5.64	9.43	7.56	4.18	.17	.00	.00	28.22
AV. PAN FACTOR	.00	.00	.00	.00	.38	.74	.84	.84	.73	.66	.00	.00	

GREEN ONION	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.15	3.96	8.06	.00	.00	.00	.00	.00	13.17
AV. PAN FACTOR	.00	.00	.00	.00	.36	.54	.80	.00	.00	.00	.00	.00	

PEAS	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.28	6.43	10.75	1.83	.00	.00	.00	.00	20.29
AV. PAN FACTOR	.00	.00	.00	.00	.38	.83	.95	.90	.00	.00	.00	.00	

POTATO	BEG 6/ 6	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.62	6.61	8.32	5.11	.44	.00	.00	22.10
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.92	.88	.68	.00	.00	

RADISH BEG 5/ 8 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.00	5.11	.00	.00	.00	.00	.00	.00	7.11
AV. PAN FACTOR	.00	.00	.00	.00	.53	.67	.00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 5/ 8 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	4.75	10.33	7.42	.58	.00	.00	.00	24.24
AV. PAN FACTOR	.00	.00	.00	.00	.36	.63	.92	.82	.33	.00	.00	.00	

SORGHUM BEG 6/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	3.39	6.38	5.11	.92	.00	.00	15.80
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.71	.88	.73	.00	.00	

SOYBEANS BEG 6/ 6 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.64	6.88	7.95	5.11	.62	.00	.00	22.19
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.62	.88	.88	.62	.00	.00	

SPINACH BEG 5/ 8 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	5.17	2.24	.00	.00	.00	.00	.00	8.57
AV. PAN FACTOR	.00	.00	.00	.00	.36	.68	.78	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 4/10 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.57	3.58	7.19	10.35	4.30	.00	.00	.00	.00	26.00
AV. PAN FACTOR	.00	.00	.00	.41	.62	.92	.92	.53	.00	.00	.00	.00	

SUGAR BEET BEG 5/ 8 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	1.15	3.30	9.11	8.32	5.33	1.17	.00	.00	28.38
AV. PAN FACTOR	.00	.00	.00	.00	.36	.46	.81	.92	.92	.85	.00	.00	

SUNFLOWER BEG 5/ 8 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.15	4.09	10.16	8.01	1.36	.00	.00	.00	24.78
AV. PAN FACTOR	.00	.00	.00	.00	.36	.55	.90	.89	.48	.00	.00	.00	

TOMATO BEG 6/ 6 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.62	4.99	7.41	5.11	.62	.00	.00	19.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.46	.82	.88	.60	.00	.00	

WINTER WHEAT BEG 4/10 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.01	5.27	7.19	9.31	1.89	.29	.41	.00	.00	25.39
AV. PAN FACTOR	.00	.00	.00	.58	.86	.92	.83	.37	.12	.48	1.03	.00	

SQUASH BEG 6/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.14	5.03	4.32	.24	.00	.00	12.74
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.31	.57	.75	.65	.00	.00	

BLAINE 49.00 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	36.2	40.6	42.7	47.6	53.6	58.4	61.7	61.5	57.1	49.9	42.6	38.8	
TOTAL PRECIPITATION (IN)	5.54	4.20	3.39	2.51	1.98	1.81	1.16	1.55	2.34	3.97	5.57	6.32	40.34
EFFECTIVE PRECIP (IN)	.06	.59	1.35	1.64	1.40	1.30	.87	1.12	1.57	1.28	.29	.00	11.47

ALFALFA BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.73	2.61	3.78	2.54	.94	.00	.00	.00	10.59
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.04	3.30	4.60	3.18	1.38	.02	.00	.00	13.52
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.94	3.07	4.33	2.97	1.24	.00	.00	.00	12.53
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	3.75	5.69	4.05	1.83	.00	.00	.00	15.91
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.13	2.38	4.05	2.75	.94	.00	.00	.00	10.25
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/10 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.89	3.51	2.32	.65	.00	.00	.00	7.37
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.80	4.21	5.69	3.83	.94	.00	.00	.00	17.48
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.20	1.00	.77	.60	.00	.00	.00	.00	2.57
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.86	1.99	1.24	.00	.00	.00	4.08
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.32	3.41	1.08	.00	.00	.00	.00	.00	6.81
AV. PAN FACTOR	.00	.00	.00	.46	.75	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.21	2.55	3.37	1.68	.00	.00	.00	7.80
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.21	3.35	3.61	.23	.00	.00	.00	7.40
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.17	1.74	.00	.00	.00	.00	.00	.00	3.91
AV. PAN FACTOR	.00	.00	.00	.46	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.86	1.45	1.05	.00	.00	.00	3.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.27	3.07	4.27	1.86	.00	.00	.00	.00	11.47
AV. PAN FACTOR	.00	.00	.00	.48	.74	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.82	1.71	.00	.00	.00	.00	.00	.00	3.52
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.01	3.36	.00	.00	.00	.00	.00	.00	6.37
AV. PAN FACTOR	.00	.00	.00	.51	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.21	2.84	3.58	1.60	.00	.00	.00	8.22
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

RADISH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.72	.00	.00	.00	00	.00	.00	.00	1.72
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.21	.00	.00	.00	.00	.00	.00	.00	2.21
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.27	3.00	2.40	.10	.00	.00	.00	.00	.00	6.76
AV. PAN FACTOR	.00	.69	.73	.88	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.21	2.19	2.99	1.53	.00	.00	.00	6.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.45	.76	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.27	1.29	2.83	.49	.00	.00	.00	.00	.00	.00	4.88
AV. PAN FACTOR	.00	1.08	.94	.88	.85	.42	.12	.12	.12	.55	.87	.00	

SQUASH	BEG 7/ 9		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.86	1.45	1.05	.00	.00	.00	3.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.65	.00	.00	

BREMERTON 47.57 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.4	42.0	44.0	49.1	55.1	59.7	64.1	63.8	59.8	52.3	44.4	40.7	
TOTAL PRECIPITATION (IN)	8.25	5.94	5.34	2.91	1.78	1.50	.80	1.17	2.10	4.18	7.51	8.93	50.41
EFFECTIVE PRECIP (IN)	.09	.70	1.52	1.91	1.28	1.11	.64	.87	1.46	1.60	.43	.87	11.68

ALFALFA BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.39	3.25	4.75	3.56	1.56	.00	.00	.00	14.52
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.84	4.02	5.70	4.35	2.10	.03	.00	.00	18.03
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.69	3.77	5.38	4.09	1.92	.00	.00	.00	16.84
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.42	4.54	6.97	5.39	2.63	.00	.00	.00	20.95
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.64	3.00	5.07	3.83	1.56	.00	.00	.00	14.09
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.81	4.43	3.30	1.21	.00	.00	.00	10.76
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.58	5.05	6.97	5.13	1.56	.00	.00	.00	22.29
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.57	1.46	1.26	1.22	.00	.00	.00	.00	4.51
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS — BEG 6/29 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.41	3.58	1.13	.00	.00	.00	7.12
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.39	.68	.75	.00	.00	.00	

CARROTS — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.21	3.30	4.03	.82	.00	.00	.00	.00	.00	8.35
AV. PAN FACTOR	.00	.00	.53	.56	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.70	3.91	4.78	2.38	.00	.00	.00	11.77
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.57	.87	.86	.60	.00	.00	

SWEET CORN — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.76	5.06	4.81	.10	.00	.00	.00	10.73
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.19	3.10	1.81	.00	.00	.00	.00	.00	.00	5.10
AV. PAN FACTOR	.00	.00	.53	.55	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER — BEG 6/29 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.25	2.91	1.74	.00	.00	.00	6.91
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.72	.70	.59	.00	

DRY ONION — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.29	3.07	3.77	5.27	2.47	.00	.00	.00	.00	14.87
AV. PAN FACTOR	.00	.00	.53	.58	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.76	1.80	.00	.00	.00	.00	.00	.00	4.69
AV. PAN FACTOR	.00	.00	.53	.53	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	3.97	3.69	.00	.00	.00	.00	.00	.00	8.08
AV. PAN FACTOR	.00	.00	.53	.61	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.70	4.47	4.87	2.19	.00	.00	.00	12.23
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.64	.88	.82	.62	.00	.00	

RADISH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	.11	.00	.00	.00	.00	.00	.00	.00	.53
AV. PAN FACTOR	.00	.00	.53	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	2.19	.00	.00	.00	.00	.00	.00	.00	2.41
AV. PAN FACTOR	.00	.00	.53	.56	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.42	3.81	3.02	.20	.00	.00	.00	.00	.00	8.45
AV. PAN FACTOR	.00	.65	.71	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/ 3		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.70	3.33	4.39	2.26	.00	.00	.00	10.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.25	1.44	3.62	.98	.15	.00	.00	.00	.00	.00	6.44
AV. PAN FACTOR	.00	1.00	.91	.88	.85	.42	.12	.12	.12	.52	.77	1.38	

SQUASH	BEG 6/29		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.25	2.91	1.70	.00	.00	.00	6.87
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.71	.60	.00	.00	

RADISH BEG 5/ 8 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.00	5.11	.00	.00	.00	.00	.00	.00	7.11
AV. PAN FACTOR	.00	.00	.00	.00	.53	.67	.00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 5/ 8 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	4.75	10.33	7.42	.58	.00	.00	.00	24.24
AV. PAN FACTOR	.00	.00	.00	.00	.36	.63	.92	.82	.33	.00	.00	.00	

SORGHUM BEG 6/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	3.39	6.38	5.11	.92	.00	.00	15.80
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.71	.88	.73	.00	.00	

SOYBEANS BEG 6/ 6 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.64	6.88	7.95	5.11	.62	.00	.00	22.19
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.62	.88	.88	.62	.00	.00	

SPINACH BEG 5/ 8 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	5.17	2.24	.00	.00	.00	.00	.00	8.57
AV. PAN FACTOR	.00	.00	.00	.00	.36	.68	.78	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 4/10 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.57	3.58	7.19	10.35	4.30	.00	.00	.00	.00	26.00
AV. PAN FACTOR	.00	.00	.00	.41	.62	.92	.92	.53	.00	.00	.00	.00	

SUGAR BEET BEG 5/ 8 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	1.15	3.30	9.11	8.32	5.33	1.17	.00	.00	28.38
AV. PAN FACTOR	.00	.00	.00	.00	.36	.46	.81	.92	.92	.85	.00	.00	

SUNFLOWER BEG 5/ 8 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.15	4.09	10.16	8.01	1.36	.00	.00	.00	24.78
AV. PAN FACTOR	.00	.00	.00	.00	.36	.55	.90	.89	.48	.00	.00	.00	

TOMATO BEG 6/ 6 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.62	4.99	7.41	5.11	.62	.00	.00	19.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.46	.82	.88	.60	.00	.00	

WINTER WHEAT BEG 4/10 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.01	5.27	7.19	9.31	1.89	.29	.41	.00	.00	25.39
AV. PAN FACTOR	.00	.00	.00	.58	.86	.92	.83	.37	.12	.48	1.03	.00	

SQUASH BEG 6/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.14	5.03	4.32	.24	.00	.00	12.74
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.31	.57	.75	.65	.00	.00	

BLAINE 49.00 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	36.2	40.6	42.7	47.6	53.6	58.4	61.7	61.5	57.1	49.9	42.6	38.8	
TOTAL PRECIPITATION (IN)	5.54	4.20	3.39	2.51	1.98	1.81	1.16	1.55	2.34	3.97	5.57	6.32	40.34
EFFECTIVE PRECIP (IN)	.06	.59	1.35	1.64	1.40	1.30	.87	1.12	1.57	1.28	.29	.00	11.47

ALFALFA BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.73	2.61	3.78	2.54	.94	.00	.00	.00	10.59
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.04	3.30	4.60	3.18	1.38	.02	.00	.00	13.52
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.94	3.07	4.33	2.97	1.24	.00	.00	.00	12.53
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	3.75	5.69	4.05	1.83	.00	.00	.00	15.91
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.13	2.38	4.05	2.75	.94	.00	.00	.00	10.25
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/10 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.89	3.51	2.32	.65	.00	.00	.00	7.37
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.80	4.21	5.69	3.83	.94	.00	.00	.00	17.48
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.20	1.00	.77	.60	.00	.00	.00	.00	2.57
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.86	1.99	1.24	.00	.00	.00	4.08
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.32	3.41	1.08	.00	.00	.00	.00	.00	6.81
AV. PAN FACTOR	.00	.00	.00	.46	.75	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.21	2.55	3.37	1.68	.00	.00	.00	7.80
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.21	3.35	3.61	.23	.00	.00	.00	7.40
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.17	1.74	.00	.00	.00	.00	.00	.00	3.91
AV. PAN FACTOR	.00	.00	.00	.46	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.86	1.45	1.05	.00	.00	.00	3.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.27	3.07	4.27	1.86	.00	.00	.00	.00	11.47
AV. PAN FACTOR	.00	.00	.00	.48	.74	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.82	1.71	.00	.00	.00	.00	.00	.00	3.52
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.01	3.36	.00	.00	.00	.00	.00	.00	6.37
AV. PAN FACTOR	.00	.00	.00	.51	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.21	2.84	3.58	1.60	.00	.00	.00	8.22
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

RADISH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.72	.00	.00	.00	00	.00	.00	.00	1.72
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.21	.00	.00	.00	.00	.00	.00	.00	2.21
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.27	3.00	2.40	.10	.00	.00	.00	.00	.00	6.76
AV. PAN FACTOR	.00	.69	.73	.88	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.21	2.19	2.99	1.53	.00	.00	.00	6.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.45	.76	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.27	1.29	2.83	.49	.00	.00	.00	.00	.00	.00	4.88
AV. PAN FACTOR	.00	1.08	.94	.88	.85	.42	.12	.12	.12	.55	.87	.00	

SQUASH	BEG 7/ 9		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.86	1.45	1.05	.00	.00	.00	3.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.65	.00	.00	

BREMERTON 47.57 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.4	42.0	44.0	49.1	55.1	59.7	64.1	63.8	59.8	52.3	44.4	40.7	
TOTAL PRECIPITATION (IN)	8.25	5.94	5.34	2.91	1.78	1.50	.80	1.17	2.10	4.18	7.51	8.93	50.41
EFFECTIVE PRECIP (IN)	.09	.70	1.52	1.91	1.28	1.11	.64	.87	1.46	1.60	.43	.87	11.68

ALFALFA BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.39	3.25	4.75	3.56	1.56	.00	.00	.00	14.52
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.84	4.02	5.70	4.35	2.10	.03	.00	.00	18.03
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.69	3.77	5.38	4.09	1.92	.00	.00	.00	16.84
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.42	4.54	6.97	5.39	2.63	.00	.00	.00	20.95
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.64	3.00	5.07	3.83	1.56	.00	.00	.00	14.09
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.81	4.43	3.30	1.21	.00	.00	.00	10.76
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.58	5.05	6.97	5.13	1.56	.00	.00	.00	22.29
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.57	1.46	1.26	1.22	.00	.00	.00	.00	4.51
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS — BEG 6/29 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.41	3.58	1.13	.00	.00	.00	7.12
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.39	.68	.75	.00	.00	.00	

CARROTS — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.21	3.30	4.03	.82	.00	.00	.00	.00	.00	8.35
AV. PAN FACTOR	.00	.00	.53	.56	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.70	3.91	4.78	2.38	.00	.00	.00	11.77
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.57	.87	.86	.60	.00	.00	

SWEET CORN — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.76	5.06	4.81	.10	.00	.00	.00	10.73
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.19	3.10	1.81	.00	.00	.00	.00	.00	.00	5.10
AV. PAN FACTOR	.00	.00	.53	.55	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER — BEG 6/29 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.25	2.91	1.74	.00	.00	.00	6.91
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.72	.70	.59	.00	

DRY ONION — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.29	3.07	3.77	5.27	2.47	.00	.00	.00	.00	14.87
AV. PAN FACTOR	.00	.00	.53	.58	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.76	1.80	.00	.00	.00	.00	.00	.00	4.69
AV. PAN FACTOR	.00	.00	.53	.53	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	3.97	3.69	.00	.00	.00	.00	.00	.00	8.08
AV. PAN FACTOR	.00	.00	.53	.61	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.70	4.47	4.87	2.19	.00	.00	.00	12.23
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.64	.88	.82	.62	.00	.00	

BUCKLEY 47.17 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.0	41.7	43.2	47.9	54.0	58.8	63.1	62.7	58.4	50.9	43.4	39.7	
TOTAL PRECIPITATION (IN)	6.52	4.79	4.33	3.91	3.13	2.92	1.20	2.03	2.94	4.20	6.15	6.85	48.97
EFFECTIVE PRECIP (IN)	.08	.68	1.46	2.42	2.20	2.13	.92	1.47	1.97	1.52	.39	.04	15.30

ALFALFA BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.44	2.13	4.33	2.84	.94	.00	.00	.00	10.67
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.87	2.88	5.26	3.60	1.45	.03	.00	.00	14.08
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.73	2.63	4.95	3.34	1.28	.00	.00	.00	12.93
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.19	3.38	6.50	4.61	1.96	.00	.00	.00	16.64
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.88	4.64	3.09	.94	.00	.00	.00	10.54
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.51	4.02	2.58	.59	.00	.00	.00	7.71
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.50	3.88	6.50	4.36	.94	.00	.00	.00	18.17
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.37	.93	.55	.00	.00	.00	.00
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.08	2.85	.23	.00	.00	.00	5.16
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.39	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.23	2.88	.72	.00	.00	.00	.00	.00	5.84
AV. PAN FACTOR	.00	.00	.53	.56	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.53	4.02	1.73	.00	.00	.00	9.27
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.58	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	4.64	4.05	.03	.00	.00	.00	8.73
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.05	.99	.00	.00	.00	.00	.00	.00	3.03
AV. PAN FACTOR	.00	.00	.53	.56	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.92	2.21	1.11	.00	.00	.00	5.24
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.01	2.63	4.84	1.69	.00	.00	.00	.00	11.17
AV. PAN FACTOR	.00	.00	.53	.58	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.72	.98	.00	.00	.00	.00	.00	.00	2.70
AV. PAN FACTOR	.00	.00	.53	.54	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.88	2.33	.00	.00	.00	.00	.00	.00	5.21
AV. PAN FACTOR	.00	.00	.53	.62	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	4.07	4.10	1.55	.00	.00	.00	9.72
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.65	.88	.82	.62	.00	.00	

RADISH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	00	.02	.00	.00	.00	.00	.00	.00	.00	.02
AV. PAN FACTOR	.00	.00	.53	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.89	.00	.00	.00	.00	.00	.00	.00	.89
AV. PAN FACTOR	.00	.00	.53	.56	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	77	2.73	1.90	.13	.00	.00	.00	.00	.00	5.53
AV. PAN FACTOR	.00	.66	.71	.87	.00	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/ 3		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.96	3.64	1.61	.00	.00	.00	8.22
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	.79	2.54	.00	.00	.00	.00	.00	.00	.00	3.57
AV. PAN FACTOR	.00	1.01	.92	.88	.85	.42	.12	.12	.12	.53	.79	1.64	

SQUASH	BEG 6/29		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.92	2.21	1.07	.00	.00	.00	5.20
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.71	.60	.00	.00	

CENTRALIA 46.72 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	39.0	42.6	44.6	49.4	55.4	60.4	64.8	64.3	60.2	52.3	44.4	40.7	
TOTAL PRECIPITATION (IN)	7.38	4.98	4.73	3.01	2.03	1.70	.84	1.46	2.22	4.13	6.44	7.71	46.71
EFFECTIVE PRECIP (IN)	.14	.74	1.56	1.97	1 46	1.30	67	1.08	1.55	1.62	.45	.09	12.63

ALFALFA BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.23	3.09	4.75	3.37	1 50	.00	.00	.00	13.94
AV. PAN FACTOR	.68	.68	.68	.68	68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.68	3.87	5.71	4.16	2.04	.03	.00	.00	17.47
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.53	3.61	5.39	3.90	1.86	.00	.00	.00	16 28
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.21	4.39	6.98	5.21	2.58	.00	.00	.00	20.36
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.43	2.83	5.07	3.63	1.50	.00	.00	.00	13.47
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.60	4.43	3.11	1.14	.00	.00	.00	10.28
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.40	4.90	6.98	4.94	1.50	.00	.00	.00	21.73
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.40	1.28	1.24	1.02	.00	.00	.00	.00	3.93
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.39	3.39	1.05	.00	.00	.00	6.83
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.38	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.14	3.12	3.87	.82	.00	.00	.00	.00	.00	7.95
AV. PAN FACTOR	.00	.00	.52	.55	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.47	3.90	4.59	2.33	.00	.00	.00	11.29
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.57	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.53	5.06	4.63	.09	.00	.00	.00	10.31
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.92	1.68	.00	.00	.00	.00	.00	.00	4.73
AV. PAN FACTOR	.00	.00	.52	.55	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.23	2.72	1.68	.00	.00	.00	6.63
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	2.90	3.61	5.27	2.26	.00	.00	.00	.00	14.26
AV. PAN FACTOR	.00	.00	.52	.57	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.06	2.58	1.67	.00	.00	.00	.00	.00	.00	4.31
AV. PAN FACTOR	.00	.00	.52	.53	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	3.79	3.48	.00	.00	.00	.00	.00	.00	7.63
AV. PAN FACTOR	.00	.00	.52	.61	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.47	4.46	4.68	2.14	.00	.00	.00	11.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.64	.88	.82	.62	.00	.00	

RADISH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.36	.10	.00	.00	.00	.00	00	.00	.00	.46
AV. PAN FACTOR	.00	.00	.52	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	1.97	.00	.00	.00	.00	.00	.00	.00	2.12
AV. PAN FACTOR	.00	.00	.52	.55	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.38	3.64	2.86	.19	.00	.00	.00	.00	.00	8.07
AV. PAN FACTOR	.00	.64	.70	.87	.83	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/ 3		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.47	3.31	4.21	2.21	.00	.00	.00	10.19
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	1.40	3.44	.76	.12	.00	.00	.00	.00	.00	5.96
AV. PAN FACTOR	.00	.98	.91	.88	.85	.42	.12	.12	.12	.52	.76	1.26	

SQUASH	BEG 6/29		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.23	2.72	1.64	.00	.00	.00	6.59
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.71	.60	.00	.00	

CHELAN 47.83 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	26.4	33 1	40.3	49.7	58.9	66.2	72.7	71.5	62.4	50.4	37.8	30.2	
TOTAL PRECIPITATION (IN)	1.39	1.03	.85	.84	.62	.60	.30	.55	.52	.73	1.43	1.71	10.57
EFFFCTIVE PRECIP (IN)	.00	.13	.53	.59	.49	.53	.28	.46	.37	.46	.11	.00	3.96

ALFALFA BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.66	6.53	7.72	5.59	3.66	.40	.00	.00	27.55
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.09	7.27	8.56	6.23	4.08	.47	.00	.00	30.70
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.87	6.90	8.14	5.91	3.87	.43	.00	.00	29.12
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.22	8.01	10.24	7.50	4.72	.40	.00	.00	34.10
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/11 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.54	4.18	7.27	9.40	6.87	4.30	.33	.00	.00	32.88
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/28 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	4.47	8.01	10.24	7.50	4.72	.40	.00	.00	35.38
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/18 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	4.18	7.27	9.40	6.87	4.30	.33	.00	.00	32.67
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.79	7.27	9.40	6.87	4.3(
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.8(

APPLES W/O COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.14	5.78	8.14	5.91	3.66
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76

APRICOT W/O COVER — BEG 4/11 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	2.72	5.04	7.30	5.27	2.60	.20	.00	.00	23.55
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER — BEG 4/20 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	3.01	5.78	8.14	5.91	3.66	.23	.00	.00	26.76
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.89	.80	.76	.56	.32	.32	

PEACH W/O COVER — BEG 4/18 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	2.72	5.04	7.30	5.27	2.60	.20	.00	.00	23.30
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER — BEG 5/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.42	5.04	7.30	5.27	2.60	.20	.00	.00	22.83
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES — BEG 5/23 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.45	4.67	6.88	5.27	3.23	.23	.00	.00	20.74
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS — BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.71	5.78	7.72	9.10	.00	.00	.00	.00	24.30
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT — BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.71	3.93	8.98	7.19	4.72	.50	.00	.00	27.02
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY — BEG 4/19 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	5.64	8.38	9.82	6.87	3.23	.10	.00	.00	34.28
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY — BEG 4/19 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	1.84	3.19	2.24	2.09	1.32	.03	.00	.00	10.95
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS — BEG 6/10 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.57	7.91	7.02	.98	.00	.00	.00	17.47
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.78	.94	.49	.00	.00	.00	

GREEN BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.50	5.53	5.91	1.09	.00	.00	.00	14.03
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.55	.80	.78	.00	.00	.00	

CARROTS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	3.21	7.44	7.57	.00	.00	.00	.00	.00	18.57
AV. PAN FACTOR	.00	.00	.00	.39	.51	.86	.80	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.43	3.03	7.50	6.87	4.02	.23	.00	.00	22.08
AV. PAN FACTOR	.00	.00	.00	.00	.35	.38	.74	.92	.83	.56	.00	.00	

SWEET CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.43	3.56	8.86	4.71	.00	.00	.00	.00	17.56
AV. PAN FACTOR	.00	.00	.00	.00	.35	.44	.87	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	3.14	7.08	2.09	.00	.00	.00	.00	.00	12.66
AV. PAN FACTOR	.00	.00	.00	.39	.50	.82	.71	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.50	4.42	5.43	3.66	.33	.00	.00	15.34
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.45	.74	.76	.67	.00	.00	

DRY ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	3.79	7.27	8.56	5.89	1.76	.00	.00	.00	27.62
AV. PAN FACTOR	.00	.00	.00	.39	.59	.84	.84	.80	.68	.00	.00	.00	

GREEN ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	2.78	6.49	2.07	.00	.00	.00	.00	.00	11.68
AV. PAN FACTOR	.00	.00	.00	.39	.45	.76	.70	.00	.00	.00	.00	.00	

PEAS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	4.17	8.38	5.81	.00	.00	.00	.00	.00	18.71
AV. PAN FACTOR	.00	.00	.00	.39	.64	.96	.93	.00	.00	.00	.00	.00	

POTATO	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.43	3.13	8.35	6.87	3.72	.03	.00	.00	22.53
AV. PAN FACTOR	.00	.00	.00	.00	.35	.39	.82	.92	.77	.61	.00	.00	

RADISH — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.41	4.31	.00	.00	.00	.00	.00	.00	.00	4.71
AV. PAN FACTOR	.00	.00	.00	.43	.66	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	3.15	7.55	9.38	2.60	.00	.00	.00	.00	23.04
AV. PAN FACTOR	.00	.00	.00	.39	.50	.87	.92	.51	.00	.00	.00	.00	

SORGHUM — BEG 6/10 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.50	5.53	6.50	4.07	.22	.00	.00	17.83
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.55	.87	.84	.54	.00	.00	

SOYBEANS — BEG 5/23 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.43	3.39	8.15	6.55	3.92	.16	.00	.00	22.59
AV. PAN FACTOR	.00	.00	.00	.00	.35	.42	.80	.88	.81	.47	.00	.00	

SPINACH — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	3.42	4.26	.00	.00	.00	.00	.00	.00	8.03
AV. PAN FACTOR	.00	.00	.00	.39	.54	.79	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.95	4.91	8.01	9.05	1.93	.00	.00	.00	.00	24.85
AV. PAN FACTOR	.00	.00	.00	.39	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.35	2.54	5.94	9.37	6.87	4.29	.45	.00	.00	29.80
AV. PAN FACTOR	.00	.00	.00	.39	.42	.70	.92	.92	.88	.82	.00	.00	

SUNFLOWER — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	2.82	7.17	9.40	4.07	.00	.00	.00	.00	23.81
AV. PAN FACTOR	.00	.00	.00	.39	.45	.83	.92	.63	.00	.00	.00	.00	

TOMATO — BEG 5/23 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.43	2.81	6.53	6.54	3.89	.13	.00	.00	20.34
AV. PAN FACTOR	.00	.00	.00	.00	.35	.36	.65	.88	.80	.44	.00	.00	

WINTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.89	6.11	8.01	7.28	.59	.12	.51	.00	.00	24.52
AV. PAN FACTOR	.00	.00	.00	.61	.91	.92	.72	.28	.12	.48	1.01	.00	

SQUASH — BEG 6/10 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.50	4.42	5.43	2.01	.00	.00	.00	13.37
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.45	.74	.70	.00	.00	.00	

CHEWELAH 48.22 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	23.7	30.4	37.1	46.0	54.1	60.6	66.0	64.9	56.8	45.8	34.4	27.7	
TOTAL PRECIPITATION (IN)	2.56	1.76	1.64	1.45	1.97	1.36	.80	1.12	1.04	1.41	2.46	3.12	20.69
EFFECTIVE PRECIP (IN)	.00	.05	.96	1.02	1.44	1.06	.76	.92	.75	.87	.01	.00	7.84

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.44	5.23	7.59	6.02	3.59	.06	.00	.00	23.93
AV. PAN FACTOR	.76	.76	.76	.76	76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.69	5.90	8.47	6.75	4.05	.12	.00	.00	26.97
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.56	5.57	8.03	6.38	3.82	.09	.00	.00	25.45
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.26	6.56	10.23	8.21	4.73	.06	.00	.00	31.06
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	2.72	5.90	9.35	7.48	4.27	.01	.00	.00	29.77
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.05	6.56	10.23	8.21	4.73	.06	.00	.00	31.85
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	2.72	5.90	9.35	7.48	4.27	.01	.00	.00	29.74
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.62	5.90	9.35	7.48	4.27	.01	.00	.00	28.63
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	4.57	8.03	6.38	3.59	.00	.00	.00	23.17
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

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RICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.42	3.91	7.15	5.65	2.45	.00	.00	.00	20.58
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

ERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.96	4.57	8.03	6.38	3.59	.00	.00	.00	23.54
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

ACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.42	3.91	7.15	5.65	2.45	.00	.00	.00	20.58
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

AR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.66	3.91	7.15	5.65	2.45	.00	.00	.00	19.82
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

APES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.06	6.72	5.65	3.13	.00	.00	.00	18.56
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

S	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.30	4.57	7.59	10.04	.00	.00	.00	.00	22.50
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

NT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.30	2.91	8.91	7.84	4.73	.14	.00	.00	24.85
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

SPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.02	6.89	9.79	7.48	3.13	.00	.00	.00	31.31
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

CRANBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.64	2.25	1.88	2.00	1.08	.00	.00	.00	7.84
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

' BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.37	5.45	7.84	2.33	.00	.00	.00	16.00
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.57	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.37	3.89	6.10	2.31	.00	.00	.00	12.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.58	5.74	8.37	.64	.00	.00	.00	.00	16.36
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.32	5.88	7.40	4.29	.00	.00	.00	18.89
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.47	7.67	7.16	.00	.00	.00	.00	16.31
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.55	5.45	3.87	.00	.00	.00	.00	.00	10.90
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.37	3.31	5.22	3.59	.06	.00	.00	12.55
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.93	5.84	8.47	6.53	2.26	.00	.00	.00	25.07
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.34	4.84	3.87	.00	.00	.00	.00	.00	10.09
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	2.13	6.81	7.65	.00	.00	.00	.00	.00	16.64
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.32	6.82	7.48	4.10	.00	.00	.00	19.71
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

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CHEYENNE

SH — BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ITHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	04	2.59	.00	.00	.00	.00	.00	.00	.00	2.63
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

OWER — BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ITHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.55	5.75	9.35	4.01	.00	.00	.00	.00	20.71
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	.00	

UM — BEG 6/21 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ITHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.37	3.89	6.52	4.27	.00	.00	.00	15.06
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

ANS — BEG 6/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.44	6.89	7.11	4.19	.00	.00	.00	19.63
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

CH — BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.67	4.21	.00	.00	.00	.00	.00	.00	5.92
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

; GRAIN — BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.27	3.40	6.56	8.99	1.88	.00	.00	.00	.00	21.09
AV. PAN FACTOR	.00	.00	.00	.41	.75	.92	.89	.43	.00	.00	.00	.00	

BEET — BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
HLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.04	1.24	4.20	9.15	7.48	4.33	.10	.00	.00	26.54
AV. PAN FACTOR	.00	.00	.00	.41	.41	.64	.90	.92	.89	.82	.00	.00	

HER — BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
HLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.36	5.29	9.35	5.65	.08	.00	.00	.00	21.78
AV. PAN FACTOR	.00	.00	.00	.41	.43	.77	.92	.72	.32	.00	.00	.00	

BEG 6/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
LY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.30	4.93	6.87	4.19	.00	.00	.00	17.28
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WHEAT — BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
LY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.11	4.45	6.56	7.14	.51	.00	.00	.00	.00	19.76
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.51	2.46	.00	

BEG 6/21 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.37	3.31	5.22	3.07	.00	.00	.00	11.98
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

CHIEF JOE DAM 48.00 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	25.2	32.3	40.7	50.5	59.0	66.2	72.8	71.7	63.3	50.6	37.5	29.3	
TOTAL PRECIPITATION (IN)	1.19	1.04	.75	.66	.68	.86	.21	.57	.40	.59	1.23	1.57	9.75
EFFECTIVE PRECIP (IN)	.00	.10	.47	.46	.54	.73	.20	.47	.29	.37	.10	.00	3.73

ALFALFA	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.63	6.34	7.83	5.61	3.83	.45	.00	.00	27.68
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	76	.76	.76	.76	

CLOVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.06	7.08	8.68	6.25	4.27	.52	.00	.00	30.85
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.84	6.71	8.25	5.93	4.05	.48	.00	.00	29.27
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.19	7.82	10.37	7.53	4.92	.45	.00	.00	34.28
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 4/11		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.67	4.15	7.08	9.52	6.89	4.49	.38	.00	.00	33.18
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 4/28		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	4.44	7.82	10.37	7.53	4.92	.45	.00	.00	35.57
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/18		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.41	4.15	7.08	9.52	6.89	4.49	.38	.00	.00	32.92
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 5/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.75	7.08	9.52	6.89	4.49	.38	.00	.00	32.11
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.10	5.59	8.25	5.93	3.83	.28	.00	.00	25.99
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/11	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.56	2.69	4.85	7.41	5.29	2.75	.25	.00	.00	23.78
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/28	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	2.98	5.59	8.25	5.93	3.83	.28	.00	.00	26.90
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/18	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.34	2.69	4.85	7.41	5.29	2.75	.25	.00	.00	23.56
AV. PAN FACTOR	32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.38	4.85	7.41	5.29	2.75	.25	.00	.00	22.92
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.44	4.48	6.99	5.29	3.40	.28	.00	.00	20.87
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.67	5.59	7.83	9.13	.00	.00	.00	.00	24.22
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.67	3.73	9.10	7.21	4.92	.55	.00	.00	27.18
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	5.62	8.19	9.94	6.89	3.40	.15	.00	.00	34.50
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	1.81	2.99	2.34	2.09	1.45	.08	.00	.00	11.05
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.40	8.02	7.04	1.06	.00	.00	.00	17.53
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.78	.94	.49	.00	.00	.00	

GREEN BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.34	5.64	5.93	1.15	.00	.00	.00	14.06
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.55	.80	.78	.00	.00	.00	

CARROTS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	3.16	7.25	7.68	.00	.00	.00	.00	.00	18.52
AV. PAN FACTOR	.00	.00	.00	.39	.51	.86	.80	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.42	2.83	7.61	6.89	4.21	.28	.00	.00	22.23
AV. PAN FACTOR	.00	.00	.00	.00	.35	.38	.74	.92	.83	.56	.00	.00	

SWEET CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.42	3.36	8.97	4.72	.00	.00	.00	.00	17.47
AV. PAN FACTOR	.00	.00	.00	.00	.35	.44	.87	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	3.10	6.89	2.12	.00	.00	.00	.00	.00	12.53
AV. PAN FACTOR	.00	.00	.00	.39	.50	.82	.71	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.34	4.52	5.45	3.83	.38	.00	.00	15.52
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.45	.74	.76	.67	.00	.00	

DRY ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	3.75	7.08	8.68	5.91	1.87	.00	.00	.00	27.71
AV. PAN FACTOR	.00	.00	.00	.39	.59	.84	.84	.80	.68	.00	.00	.00	

GREEN ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	2.73	6.29	2.10	.00	.00	.00	.00	.00	11.54
AV. PAN FACTOR	.00	.00	.00	.39	.45	.76	.70	.00	.00	.00	.00	.00	

PEAS	BEG 4/19	END 10/10							
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	4.13	8.19	5.88	.00	.0
AV. PAN FACTOR	.00	.00	.00	.39	.64	.96	.93	.00	.0

POTATO	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.42	2.93	8.47	6.89	3.89	.03	.00	.00	22.64
AV. PAN FACTOR	.00	.00	.00	.00	.35	.39	.82	.92	.77	.61	.00	.00	

CHIEF JOE DAM

RADISH — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.48	4.28	.00	.00	.00	.00	.00	.00	.00	4.76
AV. PAN FACTOR	.00	.00	.00	.43	.66	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	3.10	7.36	9.50	2.60	.00	.00	.00	.00	22.99
AV. PAN FACTOR	.00	.00	.00	.39	.50	.87	.92	.51	.00	.00	.00	.00	

SORGHUM — BEG 6/10 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.34	5.64	6.52	4.26	.27	.00	.00	18.02
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.55	.87	.84	.54	.00	.00	

SOYBEANS — BEG 5/23 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.42	3.19	8.26	6.57	4.10	.20	.00	.00	22.74
AV. PAN FACTOR	.00	.00	.00	.00	.35	.42	.80	.88	.81	.47	.00	.00	

SPINACH — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	3.38	4.10	.00	.00	.00	.00	.00	.00	7.91
AV. PAN FACTOR	.00	.00	.00	.39	.53	.79	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.15	4.87	7.82	9.17	1.92	.00	.00	.00	.00	24.94
AV. PAN FACTOR	.00	.00	.00	.39	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.42	2.48	5.74	9.49	6.89	4.48	.50	.00	.00	29.99
AV. PAN FACTOR	.00	.00	.00	.39	.41	.70	.92	.92	.88	.82	.00	.00	

SUNFLOWER — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	2.77	6.97	9.52	4.07	.00	.00	.00	.00	23.76
AV. PAN FACTOR	.00	.00	.00	.39	.45	.83	.92	.63	.00	.00	.00	.00	

TOMATO — BEG 5/23 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.42	2.61	6.64	6.56	4.07	.18	.00	.00	20.48
AV. PAN FACTOR	.00	.00	.00	.00	.35	.36	.65	.88	.80	.44	.00	.00	

WINTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.11	6.09	7.82	7.39	.59	.25	.66	.00	.00	24.92
AV. PAN FACTOR	.00	.00	.00	.61	.90	.92	.72	.28	.12	.48	1.04	.00	

SQUASH — BEG 6/10 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.34	4.52	5.45	2.14	.00	.00	.00	13.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.45	.74	.70	.00	.00	.00	

CLE ELUM 47.18 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	26.3	32.9	37.3	44.6	52.5	59.3	66.0	64.6	56.9	46.6	35.7	29.9	
TOTAL PRECIPITATION (IN)	4.14	2.46	1.91	1.27	.77	.70	.27	.59	.81	1.63	3.51	4.59	22.65
EFFECTIVE PRECIP (IN)	.00	.03	.64	.80	.54	.51	.23	.46	.57	.94	.00	.00	4.72

ALFALFA BEG 6/ 3 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3 14	6.17	4.53	3.27	.00	.00	.00	17.11
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 6/ 3 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.54	6.84	5.06	3.67	.00	.00	.00	19.10
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 6/ 3 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.34	6.50	4.79	3.47	.00	.00	.00	18.11
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 6/ 1 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	4.23	8.19	6.11	4.28	.00	.00	.00	22.81
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 5/ 4 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.81	4.27	7.51	5.58	3.87	.00	.00	.00	23.05
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/22 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.60	4.73	8.19	6.11	4.28	.00	.00	.00	23.90
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 5/12 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.25	4.27	7.51	5.58	3.87	.00	.00	.00	22.49
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/24 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.42	4.27	7.51	5.58	3.87	.00	.00	.00	21.66
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 6/ 1 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.96	6.50	4.79	3.27	.00	.00	.00	17.52
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 5/ 4	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.04	2.90	5.83	4.27	2.26	.00	.00	.00	16.30
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/22	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.37	3.36	6.50	4.79	3.27	.00	.00	.00	18.29
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 5/12	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	2.90	5.83	4.27	2.26	.00	.00	.00	15.98
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.24	2.90	5.83	4.27	2.26	.00	.00	.00	15.50
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.41	5.49	4.27	2.86	.00	.00	.00	13.04
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 6/ 3	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.75	6.17	7.42	.00	.00	.00	.00	16.33
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 6/ 3	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.76	7.18	5.84	4.28	.00	.00	.00	19.06
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.49	4.95	7.85	5.58	2.86	.00	.00	.00	22.74
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.34	1.77	1.79	1.64	1.04	.00	.00	.00	6.57
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.06	3.92	4.28	.00	.00	.00	9.26
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.67	.96	.65	.00	.00	

GREEN BEANS	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.06	2.68	3.42	.00	.00	.00	7.17
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.48	.79	.80	.00	.00	

CARROTS	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.52	2.72	7.12	3.51	.00	.00	.00	.00	13.87
AV. PAN FACTOR	.00	.00	.00	.00	.40	.57	.87	.78	.00	.00	.00	.00	

FIELD CORN	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.24	3.13	4.36	4.07	.00	.00	.00	11.80
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.40	.73	.92	.89	.00	.00	

SWEET CORN	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.24	3.54	5.20	2.88	.00	.00	.00	11.86
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.45	.86	.90	.00	.00	.00	

CRUCIFER	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.52	2.65	6.67	.55	.00	.00	.00	.00	10.39
AV. PAN FACTOR	.00	.00	.00	.00	.40	.55	.82	.74	.00	.00	.00	.00	

CUCUMBER	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.06	2.20	3.00	.00	.00	.00	6.27
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.40	.71	.75	.00	.00	

DRY ONION	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.52	3.23	6.84	5.06	3.31	.00	.00	.00	18.96
AV. PAN FACTOR	.00	.00	.00	.00	.40	.66	.84	.84	.77	.66	.00	.00	

GREEN ONION	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.52	2.28	6.32	.55	.00	.00	.00	.00	9.67
AV. PAN FACTOR	.00	.00	.00	.00	.40	.49	.78	.73	.00	.00	.00	.00	

PEAS	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.52	3.63	7.85	2.45	.00	.00	.00	.00	14.45
AV. PAN FACTOR	.00	.00	.00	.00	.40	.73	.96	.92	.00	.00	.00	.00	

POTATO	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.24	3.21	4.88	4.07	.00	.00	.00	12.40
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.41	.81	.92	.83	.00	.00	

RADISH BEG 5/15 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	3.30	.00	.00	.00	.00	.00	.00	4.03
AV. PAN FACTOR	.00	.00	.00	.00	.50	.67	.00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 5/15 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.52	2.66	7.31	5.42	.83	.00	.00	.00	16.74
AV. PAN FACTOR	.00	.00	.00	.00	.40	.56	.90	.90	.43	.00	.00	.00	

SORGHUM BEG 7/17 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.06	2.68	3.71	.00	.00	.00	7.46
AV. PAN FACTOR	.00	.00	.00	.00	00	.00	.33	.48	.85	.85	.00	.00	

SOYBEANS BEG 6/24 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.24	3.41	4.77	3.87	.00	.00	.00	12.28
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.43	.80	.88	.84	.00	.00	

SPINACH BEG 5/15 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.52	2.91	3.07	.00	.00	.00	.00	.00	6.51
AV. PAN FACTOR	.00	.00	.00	.00	.40	.60	.79	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 4/22 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.92	4.49	7.51	4.51	.21	.00	.00	.00	18.65
AV. PAN FACTOR	.00	.00	.00	.49	.54	.88	.92	.76	.29	.00	.00	.00	

SUGAR BEET BEG 5/15 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.52	2.03	6.11	5.58	4.07	.00	.00	.00	18.31
AV. PAN FACTOR	.00	.00	.00	.00	.40	.45	.75	.92	.92	.85	.00	.00	

SUNFLOWER BEG 5/15 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.52	2.34	7.06	5.57	1.60	.00	.00	.00	17.10
AV. PAN FACTOR	.00	.00	.00	.00	.40	.50	.87	.92	.57	.00	.00	.00	

TOMATO BEG 6/24 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.24	2.97	3.78	3.86	.00	.00	.00	10.85
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.38	.65	.88	.84	.00	.00	

WINTER WHEAT BEG 4/22 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.06	3.18	4.73	7.47	2.67	.00	.00	.00	.00	18.10
AV. PAN FACTOR	.00	.00	.00	.65	.81	.92	.91	.50	.12	.57	.00	.00	

SQUASH BEG 7/17 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.06	2.20	3.00	.00	.00	.00	6.27
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.40	.71	.75	.00	.00	

CLEARBROOK 48.97 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	34.9	40.1	42.7	47.9	54.0	58.6	62.4	61.7	57.5	49.9	42.1	37.8	
TOTAL PRECIPITATION (IN)	5.57	4.65	3.96	3.39	2.85	2.32	1.50	2.07	3.23	4.68	5.83	6.47	46.52
EFFECTIVE PRECIP (IN)	.00	.56	1.36	2.10	2.00	1.71	1.11	1.48	2.08	1.28	.27	.00	13.95

ALFALFA	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.30	2.21	3.61	2.20	.46	.00	.00	.00	8.77
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.61	2.91	4.44	2.85	.90	.02	.00	.00	11.73
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.51	2.68	4.16	2.63	.75	.00	.00	.00	10.73
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.10	3.37	5.55	3.71	1.35	.00	.00	.00	14.08
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.98	3.89	2.41	.46	.00	.00	.00	8.74
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.58	3.33	1.98	.16	.00	.00	.00	6.05
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.24	3.83	5.55	3.50	.46	.00	.00	.00	15.57
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.60	.56	.25	.00	.00	.00	.00	1.40
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.65	1.64	.75	.00	.00	.00	3.04
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.76	3.02	.99	.00	.00	.00	.00	.00	5.78
AV. PAN FACTOR	.00	.00	.00	.46	.74	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.35	3.03	1.20	.00	.00	.00	6.58
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.17	3.28	.00	.00	.00	.00	6.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.61	1.42	.00	.00	.00	.00	.00	.00	3.03
AV. PAN FACTOR	.00	.00	.00	.46	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.65	1.10	.56	.00	.00	.00	2.31
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.71	2.68	4.11	1.39	.00	.00	.00	.00	9.89
AV. PAN FACTOR	.00	.00	.00	.48	.73	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.25	1.38	.00	.00	.00	.00	.00	.00	2.63
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.46	2.88	.00	.00	.00	.00	.00	.00	5.33
AV. PAN FACTOR	.00	.00	.00	.50	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.65	3.24	1.12	.00	.00	.00	7.01
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

RADISH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.15	.00	.00	.00	.00	.00	.00	.00	1.15
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.65	.00	.00	.00	.00	.00	.00	.00	1.65
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.84	2.45	2.00	.05	.00	.00	.00	.00	.00	5.34
AV. PAN FACTOR	.00	.70	.74	.88	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.99	2.65	1.05	.00	.00	.00	5.70
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.45	.76	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.27	.86	2.28	.07	.00	.00	.00	.00	.00	.00	3.48
AV. PAN FACTOR	.00	1.10	.94	.88	.85	.42	.12	.12	.12	.55	.89	.00	

SQUASH	BEG 7/ 9		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.65	1.10	.56	.00	.00	.00	2.31
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.48	.71	.65	.00	.00	

COLFAX 46.88 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	29.6	35.9	39.8	46.7	54.2	60.9	67.2	66.0	58.6	48.6	38.1	32.9	
TOTAL PRECIPITATION (IN)	2.74	1.85	1.81	1.58	1.46	1.35	.50	.83	.94	1.45	2.25	3.04	19.80
EFFECTIVE PRECIP (IN)	.00	.34	1.07	1.11	1.08	1.05	.49	.70	.68	.91	.22	.00	7.64

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.66	5.20	7.95	6.33	3.85	.13	.00	.00	25.12
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.91	5.86	8.83	7.07	4.33	.19	.00	.00	28.20
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.78	5.53	8.39	6.70	4.09	.16	.00	.00	26.66
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.50	6.52	10.61	8.55	5.05	.13	.00	.00	32.36
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.03	5.86	9.72	7.81	4.57	.06	.00	.00	31.07
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.44	6.52	10.61	8.55	5.05	.13	.00	.00	33.30
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.03	5.86	9.72	7.81	4.57	.06	.00	.00	31.07
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.97	5.86	9.72	7.81	4
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.84	4.54	8.39	6.70	3.85	.00	.00	.00	24.33
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

COLFAX

APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.75	3.89	7.50	5.96	2.66	.00	.00	.00	21.76
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.36	4.54	8.39	6.70	3.85	.00	.00	.00	24.85
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.75	3.89	7.50	5.96	2.66	.00	.00	.00	21.76
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.02	3.89	7.50	5.96	2.66	.00	.00	.00	21.03
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.04	7.06	5.96	3.38	.00	.00	.00	19.44
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.54	4.54	7.95	10.41	.00	.00	.00	.00	23.43
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.54	2.90	9.28	8.18	5.05	.22	.00	.00	26.17
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.32	6.85	10.17	7.81	3.38	.00	.00	.00	32.52
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.98	2.24	2.18	2.26	1.23	.00	.00	.00	8.88
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.37	5.79	8.18	2.56	.00	.00	.00	16.90
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.57	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.37	4.21	6.42	2.52	.00	.00	.00	13.52
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.90	5.70	8.73	.69	.00	.00	.00	.00	17.03
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.83	.66	00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.31	6.22	7.73	4.59	.00	.00	.00	19.86
AV. PAN FACTOR	.00	00	.00	.00	.00	.33	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.47	8.03	7.57	.00	.00	.00	.00	17.06
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.86	5.41	4.05	.00	.00	.00	.00	.00	11.35
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.37	3.63	5.53	3.85	.12	.00	.00	13.50
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	2.25	5.80	8.83	6.86	2.47	.00	.00	.00	26.24
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.66	4.81	4.05	.00	.00	.00	.00	.00	10.55
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	2.45	6.77	7.97	.00	.00	.00	.00	.00	17.21
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.32	7.17	7.81	4.39	.04	.00	.00	20.73
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.69	.92	.85	.65	.00	.00	

RADISH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	2.91	.00	.00	.00	.00	.00	.00	.00	2.93
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.87	5.71	9.72	4.35	.00	.00	.00	.00	21.68
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	.00	

SORGHUM — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.37	4.21	6.85	4.57	.05	.00	.00	16.05
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

SOYBEANS — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.43	7.24	7.44	4.49	.00	.00	.00	20.60
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.99	4.18	.00	.00	.00	.00	.00	.00	6.19
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.17	3.71	6.52	9.35	2.11	.00	.00	.00	.00	21.86
AV. PAN FACTOR	.00	.00	.00	.41	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.02	1.56	4.17	9.52	7.81	4.63	.17	.00	.00	27.88
AV. PAN FACTOR	.00	.00	.00	.41	.41	.63	.90	.92	.89	.82	.00	.00	

SUNFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.68	5.26	9.72	5.96	.10	.00	.00	.00	22.74
AV. PAN FACTOR	.00	.00	.00	.41	.43	.77	.92	.72	.32	.00	.00	.00	

TOMATO — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.29	5.26	7.20	4.48	.00	.00	.00	18.23
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.02	4.74	6.52	7.48	.62	.00	.00	.00	.00	20.39
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.49	.96	.00	

SQUASH — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.37	3.63	5.53	3.36	.00	.00	.00	12.89
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

COLVILLE 48.55 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	24.5	31.0	37.3	46.2	54.5	61.3	67.9	66.5	58.0	46.2	33.8	27.5	
TOTAL PRECIPITATION (IN)	2.22	1.45	1.21	1.05	1.62	1.48	.77	1.16	.89	1.17	2.05	2.49	17.56
EFFECTIVE PRECIP (IN)	.00	.05	.74	.73	1.20	1.16	.75	.98	.65	.73	.00	.00	6.98

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.64	5.25	7.95	6.21	3.03	.15	.00	.00	25.03
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.89	5.93	8.86	6.97	4.30				
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84				

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEI
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.77	5.59	8.41	6.59	4.1
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.(

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	S
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.48	6.60	10.69	8.48	5.(
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	3.02	5.93	9.78	7.73
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUC
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.40	6.60	10.69	8.
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	3.02	5.93	9.78
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.9

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00
AV. PAN FACTOR	.36	.36	.36	.36

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	
AV. PAN FACTOR	.32	.32	.32	.32	.

RADISH BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	2.91	.00	.00	.00	.00	.00	.00	.00	2.93
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.87	5.71	9.72	4.35	.00	.00	.00	.00	21.68
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	.00	

SORGHUM BEG 6/21 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.37	4.21	6.85	4.57	.05	.00	.00	16.05
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

SOYBEANS BEG 6/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.43	7.24	7.44	4.49	.00	.00	.00	20.60
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.99	4.18	.00	.00	.00	.00	.00	.00	6.19
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.17	3.71	6.52	9.35	2.11	.00	.00	.00	.00	21.86
AV. PAN FACTOR	.00	.00	.00	.41	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.02	1.56	4.17	9.52	7.81	4.63	.17	.00	.00	27.88
AV. PAN FACTOR	.00	.00	.00	.41	.41	.63	.90	.92	.89	.82	.00	.00	

SUNFLOWER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.68	5.26	9.72	5.96	.10	.00	.00	.00	22.74
AV. PAN FACTOR	.00	.00	.00	.41	.43	.77	.92	.72	.32	.00	.00	.00	

TOMATO BEG 6/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.29	5.26	7.20	4.48	.00	.00	.00	18.23
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.02	4.74	6.52	7.48	.62	.00	.00	.00	.00	20.39
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.49	.96	.00	

SQUASH BEG 6/21 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.37	3.63	5.53	3.36	.00	.00	.00	12.89
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

COLVILLE 48.55 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	24.5	31.0	37.3	46.2	54.5	61.3	67.9	66.5	58.0	46.2	33.8	27.5	
TOTAL PRECIPITATION (IN)	2.22	1.45	1.21	1.05	1.62	1.48	.77	1.16	.89	1.17	2.05	2.49	17.56
EFFECTIVE PRECIP (IN)	.00	.05	.74	.73	1.20	1.16	.75	.98	.65	.73	.00	.00	6.98

ALFALFA	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.64	5.25	7.95	6.21	3.83	.15	.00	.00	25.03
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.89	5.93	8.86	6.97	4.30	.20	.00	.00	28.16
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.77	5.59	8.41	6.59	4.07	.18	.00	.00	26.60
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.48	6.60	10.69	8.48	5.01	.15	.00	.00	32.42
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 4/16		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	3.02	5.93	9.78	7.73	4.54	.09	.00	.00	31.31
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 5/ 4		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.40	6.60	10.69	8.48	5.01	.15	.00	.00	33.34
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	3.02	5.93	9.78	7.73	4.54	.09	.00	.00	31.15
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 5/ 7		END 10/10									
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.93	5.07	°					
AV. PAN FACTOR	.36	.36	.36	.36	.64							

APPLES W/O COVER	BEG 5/14		END 10/10		
	JAN	FEB	MAR	APR	M
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.
AV. PAN FACTOR	.32	.32	.32	.32	.

COLVILLE

APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.14	1.70	3.90	7.49	5.83	2.65	.00	.00	.00	21.73
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.29	4.58	8.41	6.59	3.83	.01	.00	.00	24.71
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.70	3.90	7.49	5.83	2.65	.00	.00	.00	21.63
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.95	3.90	7.49	5.83	2.65	.00	.00	.00	20.83
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.03	7.03	5.83	3.36	.01	.00	.00	19.27
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.49	4.58	7.95	10.37	.00	.00	.00	.00	23.39
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.49	2.89	9.32	8.10	5.01	.23	.00	.00	26.05
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	4.34	6.94	10.24	7.73	3.36	.00	.00	.00	32.65
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	.91	2.21	2.00	2.05	1.24	.00	.00	.00	8.46
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.35	5.71	8.10	2.56	.00	.00	.00	16.72
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.35	4.07	6.30	2.51	.00	.00	.00	13.23
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.86	5.77	8.75	.66	.00	.00	.00	.00	17.13
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.24	6.15	7.64	4.56	.03	.00	.00	19.62
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.40	8.02	7.42	.00	.00	.00	.00	16.84
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.83	5.47	4.06	.00	.00	.00	.00	.00	11.45
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.35	3.47	5.39	3.83	.14	.00	.00	13.18
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	2.22	5.87	8.86	6.75	2.47	.00	.00	.00	26.26
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.62	4.85	4.06	.00	.00	.00	.00	.00	10.62
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	2.42	6.86	8.01	.00	.00	.00	.00	.00	17.[illegible]
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	S
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.24	7.13	7.73	4.36	.07	.00	.00	
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

RADISH	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	2.89	.00	.00	00	.00	.00	.00	.00	2.99
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.83	5.78	9.78	4.16	.00	.00	.00	.00	21.64
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	.00	

SORGHUM	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.35	4.08	6.73	4.54	.08	.00	.00	15.78
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

SOYBEANS	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.36	7.21	7.35	4.46	.00	.00	.00	20.37
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.95	4.21	.00	.00	.00	.00	.00	.00	6.26
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 4/ 2	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.64	3.71	6.60	9.40	1.94	.00	.00	.00	.00	22.30
AV. PAN FACTOR	.00	.00	.00	.41	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.09	1.51	4.19	9.57	7.73	4.60	.19	.00	.00	27.88
AV. PAN FACTOR	.00	.00	.00	.41	.41	.63	.90	.92	.89	.82	.00	.00	

SUNFLOWER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.64	5.31	9.78	5.84	.10	.00	.00	.00	22.75
AV. PAN FACTOR	.00	.00	.00	.41	.43	.77	.92	.72	.32	.00	.00	.00	

TOMATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.22	5.16	7.09	4.45	.00	.00	.00	17.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT	BEG 4/ 2	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.49	4.77	6.60	7.47	.53	.00	.00	.00	.00	20.86
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.51	.00	.00	

SQUASH	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.35	3.47	5.39	3.36	.00	.00	.00	12.56
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

CONCONULLY # 48.55 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	22.5	29.2	36 6	45.2	54.4	61.1	66.5	66.3	57.9	46.4	33.5	23.0	
TOTAL PRECIPITATION (IN)	1.71	1 39	1.19	1.06	1.45	1.21	.60	1 20	.77	.93	1.38	1.89	14.78
EFFECTIVE PRECIP (IN)	.00	.00	.72	.74	1.07	.96	.53	.90	.54	.58	00	.00	6.05

ALFALFA — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.63	5.43	6.64	4.57	3.05	.23	.00	.00	22.55
AV. PAN FACTOR	.76	.76	76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.02	6.10	7.40	5.14	3.42	.29	.00	.00	25.37
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.82	5.77	7.02	4.86	3.23	.26	.00	.00	23.96
AV PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.24	6.77	8.91	6.30	3.99	.23	.00	.00	28.44
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER — BEG 4/11 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	3.13	6.10	8.15	5.72	3.61	.17	.00	.00	27.16
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER — BEG 4/28 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	3.39	6.77	8.91	6.30	3.99	.23	.00	.00	29.61
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER — BEG 4/18 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.16	3.13	6.10	8.15	5.72	3.61	.17	.00	.00	27.05
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER — BEG 5/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.58	6.10	8.15	5.72	3.61	.17	.00	.00	26.34
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.26	4.76	7.02	4.86	3.05
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.7[illegible]

APRICOT W/O COVER	BEG 4/11	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.16	1.82	4.08	6.27	4.28	2.10	.06	.00	.00	18.78
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/28	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	2.08	4.76	7.02	4.86	3.05	.09	.00	.00	21.86
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/18	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	1.82	4.08	6.27	4.28	2.10	.06	.00	.00	18.71
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.35	4.08	6.27	4.28	2.10	.06	.00	.00	18.14
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.21	3.75	5.89	4.20	2.67	.09	.00	.00	16.88
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.87	4.76	6.64	7.74	.00	.00	.00	.00	20.01
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.87	3.08	7.78	6.01	3.99	.31	.00	.00	22.04
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.68	.40	.40	

RASPBERRY	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	4.45	7.11	8.53	5.72	2.67	.00	.00	.00	28.57
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.03	2.40	1.74	1.40	.97	.00	.00	.00	7.63
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.05	6.84	5.86	.72	.00	.00	.00	14.47
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.78	.94	.49	.00	.00	.00	

GREEN BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	00	.00	.00	.00	99	4.73	4.85	.87	.00	.00	.00	11.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.80	.78	.00	.00	.00	

CARROTS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	2.36	6.26	6.48	.00	.00	.00	.00	.00	15.31
AV. PAN FACTOR	00	.00	.00	.41	.52	.86	.80	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.21	2.35	6.48	5.72	3.37	.09	00	.00	18.22
AV. PAN FACTOR	.00	.00	.00	.00	.36	.39	.74	.92	.83	.56	.00	.00	

SWEET CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.21	2.82	7.67	3.76	.00	.00	.00	.00	14.46
AV. PAN FACTOR	.00	.00	.00	.00	.36	.45	.87	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	2.29	5.94	1.79	00	.00	.00	.00	.00	10.23
AV. PAN FACTOR	.00	.00	.00	.41	.51	.82	.72	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	00	.00	.00	.00	.99	3.76	4.42	3.04	.17	.00	.00	12.39
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.45	.74	.76	.67	.00	.00	

DRY ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	2.85	6.10	7.40	4.84	1.39	.00	.00	.00	22.80
AV. PAN FACTOR	.00	.00	.00	.41	.60	.84	.84	.80	.68	.00	.00	.00	

GREEN ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	1.98	5.41	1.77	.00	.00	.00	.00	.00	9.37
AV. PAN FACTOR	.00	.00	.00	.41	.46	.76	.71	.00	.00	.00	.00	.00	

PEAS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	3.20	7.11	5.00	.00	.00	.00	.00	.00	15.53
AV. PAN FACTOR	.00	.00	.00	.41	.65	.96	.93	.00	.00	.00	.00	.00	

POTATO	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.21	2.45	7.23	5.72	3.10	.01	.00	.00	18.71
AV. PAN FACTOR	.00	.00	.00	.00	.36	.40	.82	.92	.77	.61	.00	.00	

APRICOT W/O COVER — BEG 4/11 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.16	1.82	4.08	6.27	4.28	2.10	.06	.00	.00	18.78
AV. PAN FACTOR	.32	.32	32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER — BEG 4/28 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	2.08	4.76	7.02	4.86	3.05	.09	.00	.00	21.86
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER — BEG 4/18 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	1.82	4.08	6.27	4.28	2.10	.06	.00	.00	18.71
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER — BEG 5/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1 35	4.08	6.27	4.28	2.10	.06	.00	.00	18.14
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES — BEG 5/23 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.21	3.75	5.89	4.28	2.67	.09	.00	.00	16.88
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.87	4.76	6.64	7.74	.00	.00	.00	.00	20.01
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.87	3.08	7.78	6.01	3.99	.31	.00	.00	22.04
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
4.45	7.11	8.53	5.72	2.67	.00	.00	.00	28.57
.84	.96	.96	.92	.68	.40	.32	.32	

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
1.03	2.40	1.74	1.40	.97	.00	.00	.00	7.63
.32	.40	.24	.32	.32	.32	.32	.32	

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
.00	1.05	6.84	5.86	.72	.00	.00	.00	14.47
.00	.34	.78	.94	.49	.00	.00	.00	

[G, OCTOBER 1985)

GREEN BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.99	4.73	4.85	.87	.00	.00	.00	11.45
AV. PAN FACTOR	.00	.00	00	.00	.00	.33	.56	.80	.78	.00	.00	.00	

CARROTS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	2.36	6.26	6.48	.00	.00	.00	.00	.00	15.31
AV. PAN FACTOR	.00	.00	.00	.41	.52	.86	.80	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.21	2.35	6.48	5.72	3.37	.09	00	.00	18.22
AV. PAN FACTOR	.00	.00	.00	.00	.36	.39	.74	.92	.83	.56	.00	.00	

SWEET CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	00	.00	.21	2.82	7.67	3.76	.00	.00	.00	.00	14.46
AV. PAN FACTOR	.00	.00	.00	.00	36	.45	.87	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	2.29	5.94	1.79	.00	.00	.00	.00	.00	10.23
AV. PAN FACTOR	.00	.00	.00	.41	.51	.82	.72	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.99	3.76	4.42	3.04	.17	.00	.00	12.39
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.45	.74	.76	.67	.00	.00	

DRY ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	2.85	6.10	7.40	4.84	1.39	.00	.00	.00	22.80
AV. PAN FACTOR	.00	.00	.00	.41	.60	.84	.84	.80	.68	.00	.00	.00	

GREEN ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	1.98	5.41	1.77	.00	.00	.00	.00	.00	9.37
AV. PAN FACTOR	.00	.00	.00	.41	.46	.76	.71	.00	.00	.00	.00	.00	

PEAS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	3.20	7.11	5.00	.00	.00	.00	.00	.00	15.53
AV. PAN FACTOR	.00	.00	.00	.41	.65	.96	.93	.00	.00	.00	.00	.00	

POTATO	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.21	2.45	7.23	5.72	3.10	.01	.00	.00	18.71
AV. PAN FACTOR	.00	.00	.00	.00	.36	.40	.82	.92	.77	.61	.00	.00	

RADISH BEG 4/19 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	00	.00	.26	3 25	00	.00	.00	.00	.00	.00	.00	3.52
AV. PAN FACTOR	.00	.00	.00	.44	.66	.00	.00	.00	.00	.00	00	.00	

SAFFLOWER BEG 4/19 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	00	.00	.00	.22	2.30	6.37	8.14	1.63	.00	.00	.00	.00	18 86
AV. PAN FACTOR	.00	.00	.00	.41	.51	.87	.92	.51	.00	.00	.00	.00	

SORGHUM BEG 6/10 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.99	4.74	5.39	3.41	.08	.00	.00	14.61
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.87	.84	.54	.00	.00	

SOYBEANS BEG 5/23 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.21	2.67	7.04	5.43	3.28	.03	.00	.00	18.66
AV. PAN FACTOR	.00	.00	.00	.00	.36	.43	.80	.88	.81	.47	.00	.00	

SPINACH BEG 4/19 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	2.53	3.44	.00	.00	.00	.00	.00	.00	6.19
AV. PAN FACTOR	00	.00	.00	.41	.55	.79	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.59	3.83	6.77	7.84	1.26	.00	.00	.00	.00	20.30
AV. PAN FACTOR	.00	.00	.00	.41	.75	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET BEG 4/19 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.22	1.77	4.97	8.13	5.72	3.61	.27	.00	.00	24.67
AV. PAN FACTOR	.00	.00	.00	.41	.43	.70	.92	.92	.88	.82	.00	.00	

SUNFLOWER BEG 4/19 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.22	2.02	6.04	8.15	3.04	.00	.00	.00	.00	19.47
AV. PAN FACTOR	.00	.00	.00	.41	.47	.83	.92	.63	.00	.00	.00	.00	

TOMATO BEG 5/23 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.21	2.16	5.63	5.43	3.25	.00	.00	.00	16.68
AV. PAN FACTOR	.00	.00	.00	.00	.36	.37	.65	.88	.80	.44	.00	.00	

WINTER WHEAT BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.42	4.88	6.77	6.25	.29	.00	.17	.00	.00	19.78
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.51	.00	.00	

SQUASH BEG 6/10 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.99	3.76	4.42	1.60	.00	.00	.00	10.77
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.45	.74	.70	.00	.00	.00	

CONCRETE 48.55 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	36.0	40.5	43.1	49.2	55.8	60.5	64.6	64.3	60.3	52.4	43.2	38.3	
TOTAL PRECIPITATION (IN)	10.34	7.55	6.92	4.47	3.08	2.49	1.42	1.99	3.73	6.70	9.44	11.36	69.49
EFFECTIVE PRECIP (IN)	.06	.59	1.39	2.61	2.14	1.88	1.06	1.42	2.41	1.44	.33	.00	15.33

ALFALFA BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.26	2.21	3.87	2.47	.33	.00	.00	.00	9.14
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	2.93	4.74	3.16	.81	.02	.00	.00	12.25
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.48	2.69	4.45	2.93	.65	.00	.00	.00	11.20
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.05	3.41	5.90	4.07	1.30	.00	.00	.00	14.73
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.97	4.16	2.70	.33	.00	.00	.00	9.16
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/10 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.56	3.58	2.24	.01	.00	.00	.00	6.39
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.29	3.89	5.90	3.85	.33	.00	.00	.00	16.25
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.52	.68	.41	.00	.00	.00	.00	1.62
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS — BEG 7/ 9 — END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.75	1.87	.65	.00	.00	.00	3.27
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.57	.76	.71	.00	.00	

CARROTS — BEG 3/31 — END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.78	3.05	1.08	.00	.00	.00	.00	.00	5.91
AV. PAN FACTOR	.00	.00	.00	.45	.74	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN — BEG 6/10 — END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.54	3.35	1.14	.00	.00	.00	7.02
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN — BEG 6/10 — END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.40	3.61	.00	.00	.00	.00	7.01
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.61	.88	.84	.00	.00	.00	

CRUCIFER — BEG 3/31 — END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.62	1.43	.00	.00	.00	.00	.00	.00	3.05
AV. PAN FACTOR	.00	.00	.00	.45	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER — BEG 7/ 9 — END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)+	.00	.00	.00	.00	.00	.00	.75	1.29	.45	.00	.00	.00	2.49
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.47	.71	.72	.63	.00	

DRY ONION — BEG 3/31 — END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.73	2.69	4.39	1.66	.00	.00	.00	.00	10.47
AV. PAN FACTOR	.00	.00	.00	.48	.73	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION — BEG 3/31 — END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.24	1.39	.00	.00	.00	.00	.00	.00	2.63
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS — BEG 3/31 — END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.51	2.92	.00	.00	.00	.00	.00	.00	5.43
AV. PAN FACTOR	.00	.00	.00	.50	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO — BEG 6/10 — END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.85	3.58	1.05	.00	.00	.00	7.48
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

RADISH	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.15	.00	.00	.00	.00	.00	.00	.00	1.15
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.67	.00	.00	.00	.00	.00	.00	.00	1.67
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.46	2.50	1.99	.07	.00	.00	.00	.00	.00	5.02
AV. PAN FACTOR	.00	.69	.73	.88	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.15	2.95	.98	.00	.00	.00	6.08
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.44	.76	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.26	.48	2.33	.02	.00	.00	.00	.00	.00	.00	3.09
AV. PAN FACTOR	.00	1.08	.94	.88	.85	.42	.12	.12	.12	.53	.84	.00	

SQUASH	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.75	1.29	.45	.00	.00	.00	2.49
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.47	.71	.65	.00	.00	

SAFFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	00	00	00	1.14	4.98	8.94	10.74	1.02	.00	.00	.00	.00	26.82
AV. PAN FACTOR	00	00	.00	.38	.66	.92	.81	.31	.00	.00	.00	.00	

SORGHUM — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	00	00	00	.00	.00	2.20	8.48	9.70	5.58	.41	.00	.00	26.46
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.88	.81	.54	.00	.00	

SOYBEANS — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	4.04	11.02	9.78	5.27	.15	00	.00	30.99
AV. PAN FACTOR	.00	.00	.00	.00	.33	.45	.83	.88	.77	.43	.00	.00	

SPINACH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	5.30	1.46	.00	.00	.00	.00	.00	.00	7.91
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.36	3.00	7.16	8.95	7.24	.00	.00	.00	.00	.00	26.71
AV. PAN FACTOR	.00	.00	.45	.62	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.13	3.49	8.02	12.23	10.19	5.84	.24	.00	.00	41.14
AV. PAN FACTOR	.00	.00	.00	.37	.49	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.13	4.33	8.85	11.67	2.43	.00	.00	.00	.00	28.41
AV. PAN FACTOR	.00	.00	.00	.37	.59	.91	.88	.47	.00	.00	.00	.00	

TOMATO — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	3.13	9.18	9.78	5.36	.25	.00	.00	28.43
AV. PAN FACTOR	.00	.00	.00	.00	.33	.36	.69	.88	.78	.43	.00	.00	

WINTER WHEAT — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.70	4.40	7.17	8.21	3.40	.92	.47	.70	.00	.00	25.96
AV. PAN FACTOR	.00	.00	.64	.87	.92	.85	.39	.12	.12	.45	.80	.00	

SQUASH — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.13	6.66	8.33	1.89	.00	.00	.00	19.01
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.65	.00	.00	.00	

COULEE DAM 47.95 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	26.0	32.0	39.8	49.0	57.8	65.3	72.4	71.0	62.8	50.5	37.3	29.9	
TOTAL PRECIPITATION (IN)	1.17	.87	.71	.76	1.09	.72	.38	.58	.53	.65	1.26	1.51	10.23
EFFECTIVE PRECIP (IN)	.00	.06	.44	.53	.83	.61	.37	.53	.42	.41	.09	.00	4.30

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.09	6.32	9.00	7.27	4.61	.43	.00	.00	29.72
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.37	7.05	9.99	8.09	5.14	.49	.00	.00	33.13
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.23	6.69	9.49	7.68	4.88	.46	.00	.00	31.43
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.94	7.78	11.96	9.73	5.94	.43	.00	.00	37.78
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.41	3.73	7.05	10.98	8.91	5.41	.36	.00	.00	36.84
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.14	7.78	11.96	9.73	5.94	.43	.00	.00	38.99
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	3.73	7.05	10.98	8.91	5.41	.36	.00	.00	36.56
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.57	7.05	10.98	8.91	5.41	.36	.00	.00	35.28
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.20	5.59	9.49	7.68	4.61	.26	.00	.00	28.84
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	2.30	4.86	8.51	6.86	3.29	.23	.00	.00	26.37
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.95	5.59	9.49	7.68	4.61	.26	.00	.00	29.59
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	2.30	4.86	8.51	6.86	3.29	.23	.00	.00	26.15
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.51	4.86	8.51	6.86	3.29	.23	.00	.00	25.26
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	4.10	8.01	6.86	4.08	.26	.00	.00	23.31
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	5.59	9.00	11.79	.00	.00	.00	.00	27.23
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	3.77	10.48	9.32	5.94	.53	.00	.00	30.89
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	5.15	8.15	11.47	8.91	4.08	.13	.00	.00	37.99
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	1.45	3.04	2.59	2.75	1.70	.06	.00	.00	11.69
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.59	6.52	9.32	3.27	.00	.00	.00	19.70
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.56	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.59	4.74	7.36	3.13	.00	.00	.00	15.83
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.41	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	2.40	6.86	9.87	.80	.00	.00	.00	.00	20.09
AV. PAN FACTOR	.00	.00	.00	.39	.45	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	2.09	7.01	8.82	5.43	.28	.00	.00	23.64
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.26	9.06	8.73	.00	.00	.00	.00	20.05
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.76	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	2.37	6.54	4.59	.00	.00	.00	.00	.00	13.65
AV. PAN FACTOR	.00	.00	.00	.39	.45	.78	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.59	4.09	6.36	4.61	.42	.00	.00	16.07
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.36	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	2.80	6.98	9.99	7.85	3.13	.00	.00	.00	30.90
AV. PAN FACTOR	.00	.00	.00	.39	.51	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	2.14	5.86	4.59	.00	.00	.00	.00	.00	12.74
AV. PAN FACTOR	.00	.00	.00	.39	.42	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	3.02	8.06	9.00	.00	.00	.00	.00	.00	20.23
AV. PAN FACTOR	.00	.00	.00	.39	.54	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.10	8.08	8.91	5.20	.34	.00	.00	24.64
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

RADISH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	3.57	.00	.00	.00	.00	.00	.00	.00	3.72
AV. PAN FACTOR	.00	.00	.00	.39	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	2.37	6.87	10.98	5.15	.00	.00	.00	.00	25.51
AV. PAN FACTOR	.00	.00	.00	.39	.45	.82	.92	.59	.00	.00	.00	.00	

SORGHUM — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.59	4.75	7.83	5.41	.34	.00	.00	18.91
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.41	.81	.88	.66	.00	.00	

SOYBEANS — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	2.23	8.17	8.50	5.31	.24	.00	.00	24.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.69	.88	.87	.53	.00	.00	

SPINACH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	2.51	5.28	.00	.00	.00	.00	.00	.00	7.94
AV. PAN FACTOR	.00	.00	.00	.39	.47	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.00	4.45	7.78	10.57	2.57	.00	.00	.00	.00	26.36
AV. PAN FACTOR	.00	.00	.00	.40	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.15	2.02	5.12	10.74	8.91	5.47	.48	.00	.00	32.89
AV. PAN FACTOR	.00	.00	.00	.39	.40	.63	.90	.92	.89	.82	.00	.00	

SUNFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	2.16	6.35	10.98	6.86	.16	.00	.00	.00	26.65
AV. PAN FACTOR	.00	.00	.00	.39	.42	.76	.92	.72	.32	.00	.00	.00	

TOMATO — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	2.07	5.93	8.22	5.31	.21	.00	.00	21.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.51	.85	.86	.51	.00	.00	

WINTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.92	5.62	7.78	8.49	.81	.26	.60	.00	.00	25.48
AV. PAN FACTOR	.00	.00	.00	.61	.91	.92	.72	.28	.12	.48	1.06	.00	

SQUASH — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.59	4.09	6.36	4.24	.00	.00	.00	15.27
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.36	.67	.72	.00	.00	.00	

COUPEVILLE 48.20 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.5	41.7	43.6	47.9	53.1	57.4	60.8	61.0	57.2	50.3	43.7	40.6	
TOTAL PRECIPITATION (IN)	2.55	1.71	1.79	1.62	1.47	1.23	.76	1.00	1.30	1.66	2.35	3.00	20.44
EFFECTIVE PRECIP (IN)	.20	.59	1.03	1.08	1.05	.89	.58	.71	.89	.96	.36	.09	8.44

ALFALFA BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.95	2.89	3.93	2.88	1.62	.18	.00	.00	12.45
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.26	3.56	4.73	3.51	2.06	.38	.00	.00	15.50
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	3.33	4.46	3.30	1.92	.31	.00	.00	14.48
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	4.00	5.79	4.36	2.51	.24	.00	.00	17.75
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.39	2.67	4.20	3.09	1.62	.00	.00	.00	11.97
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/10 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.19	3.67	2.67	1.33	.00	.00	.00	8.85
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.05	4.45	5.79	4.15	1.62	.00	.00	.00	19.05
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.51	1.33	1.01	.98	.29	.00	.00	.00	4.12
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

COUPEVILLE

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.10	2.34	1.91	.00	.00	.00	5.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.58	3.67	1.17	.00	.00	.00	.00	.00	7.42
AV. PAN FACTOR	.00	.00	.00	.46	.75	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.54	2.76	3.69	2.36	.00	.00	.00	9.35
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.54	3.53	3.93	.54	.00	.00	.00	8.55
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.43	2.03	.00	.00	.00	.00	.00	.00	4.47
AV. PAN FACTOR	.00	.00	.00	.46	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.10	1.82	1.73	.24	.00	.00	4.89
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.53	3.33	4.41	2.32	.00	.00	.00	.00	12.60
AV. PAN FACTOR	.00	.00	.00	.48	.73	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.09	2.00	.00	.00	.00	.00	.00	.00	4.08
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.06	3.25	3.77	.00	.00	.00	.00	.00	.00	7.09
AV. PAN FACTOR	.00	.00	.00	.50	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.54	3.04	3.90	2.28	.00	.00	.00	9.76
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.54	.87	.86	.66	.00	.00	

RADISH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.28	1.99	.00	.00	.00	.00	.00	.00	.00	2.27
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.47	.00	.00	.00	.00	.00	.00	.00	2.47
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.27	1.04	3.24	2.69	.15	.00	.00	.00	.00	.00	8.19
AV. PAN FACTOR	.00	.66	.71	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.54	2.41	3.33	2.21	.10	.00	.00	8.60
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.45	.77	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.64	1.86	3.08	.91	.04	.00	.00	.00	.00	.00	6.52
AV. PAN FACTOR	.00	1.03	.92	.88	.85	.42	.12	.12	.12	.55	.82	1.26	

SQUASH	BEG 7/ 9		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.10	1.82	1.73	.00	.00	.00	4.65
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.65	.00	.00	

DALLESPORT 45.62 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	33.4	40.1	45.2	52.2	60.1	66.8	73.1	72.2	65.5	54.0	42.2	36.5	
TOTAL PRECIPITATION (IN)	2.88	1.48	1.10	.50	.45	.31	.08	.32	.38	.93	2.03	2.71	13.17
EFFECTIVE PRECIP (IN)	00	.22	.66	.32	.33	.25	.07	.26	.29	.58	.24	.00	3.23

ALFALFA BEG 6/ 3 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	00	.00	.00	4.08	7.13	5.49	4.32	.16	.00	.00	21.18
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 6/ 3 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	4.54	7.89	6.10	4.80	.20	.00	.00	23.52
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 6/ 3 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	4.31	7.51	5.79	4.56	.18	.00	.00	22.35
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 6/ 1 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	5.38	9.40	7.31	5.53	.16	.00	.00	27.78
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 5/ 4 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.58	5.30	8.64	6.70	5.05	.12	.00	.00	28.39
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/22 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	5.83	9.40	7.31	5.53	.16	.00	.00	29.08
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 5/12 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.79	5.30	8.64	6.70	5.05	.12	.00	.00	27.60
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/24 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.60	5.30	8.64	6.70	5.05	.12	.00	.00	26.41
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 6/ 1 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.90	7.51	5.79	4.32	.06	.00	.00	21.58
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 5/ 4	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.66	3.72	6.75	5.19	3.10	.04	.00	.00	20.46
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/22	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.57	4.25	7.51	5.79	4.32	.06	.00	.00	22.49
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 5/12	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.15	3.72	6.75	5.19	3.10	.04	.00	.00	19.95
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.38	3.72	6.75	5.19	3.10	.04	.00	.00	19.18
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.56	6.37	5.19	3.83	.06	.00	.00	16.02
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 6/ 3	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.62	7.13	8.82	.00	.00	.00	.00	19.57
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 6/ 3	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.48	8.27	7.00	5.53	.22	.00	.00	23.50
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.02	6.09	9.02	6.70	3.83	.00	.00	.00	27.67
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.64	2.40	2.20	2.16	1.65	.00	.00	.00	9.04
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.24	4.74	5.53	.11	.00	.00	11.62
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.32	.66	.96	.65	.00	.00	

GREEN BEANS	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.24	3.29	4.50	.18	.00	.00	9.22
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	32	.47	.79	.80	.00	.00	

CARROTS	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	3.41	8.20	4.32	.00	.00	.00	.00	16.73
AV. PAN FACTOR	.00	.00	.00	.00	.38	.55	.87	.78	.00	.00	.00	.00	

FIELD CORN	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.34	3.56	5.25	5.29	.22	.00	.00	14.66
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.38	.73	.92	.89	.00	.00	

SWEET CORN	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.34	4.04	6.25	3.91	.00	.00	.00	14.53
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.43	.86	.90	.00	.00	.00	

CRUCIFER	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	3.32	7.70	.68	.00	.00	.00	.00	12.50
AV. PAN FACTOR	.00	.00	.00	.00	.38	.54	.82	.74	.00	.00	.00	.00	

CUCUMBER	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.24	2.72	3.99	.15	.00	.00	8.11
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.32	.39	.71	.75	.00	.00	

DRY ONION	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.80	4.04	7.89	6.10	4.37	.11	.00	.00	23.30
AV. PAN FACTOR	.00	.00	.00	.00	.38	.65	.84	.84	.77	.66	.00	.00	

GREEN ONION	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	2.88	7.29	.67	.00	.00	.00	.00	11.64
AV. PAN FACTOR	.00	.00	.00	.00	.38	.47	.78	.73	.00	.00	.00	.00	

PEAS	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	4.50	9.02	2.99	.00	.00	.00	.00	17.31
AV. PAN FACTOR	.00	.00	.00	.00	.38	.72	.96	.92	.00				

POTATO	BEG 6/24	END 10/ 7			
	JAN	FEB	MAR	APR	MAY
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00
AV. PAN FACTOR	.00	.00	.00	.00	.00

RADISH	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.06	4.18	.00	.00	.00	.00	.00	.00	5.24
AV. PAN FACTOR	.00	.00	.00	.00	.48	.67	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	3.33	8.41	6.52	1.35	.00	.00	.00	20.40
AV. PAN FACTOR	.00	.00	.00	.00	.38	.54	.90	.90	.43	.00	.00	.00	

SORGHUM	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.24	3.29	4.85	.20	.00	.00	9.59
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.32	.47	.85	.85	.00	.00	

SOYBEANS	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.34	3.89	5.74	5.05	.20	.00	.00	15.21
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.42	.79	.88	.84	.00	.00	

SPINACH	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	3.65	3.57	.00	.00	.00	.00	.00	8.02
AV. PAN FACTOR	.00	.00	.00	.00	.38	.59	.79	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 4/22	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.21	2.44	5.53	8.64	5.46	.45	.00	.00	.00	22.74
AV. PAN FACTOR	.00	.00	.00	.45	.50	.88	.92	.76	.29	.00	.00	.00	

SUGAR BEET	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.80	2.56	7.00	6.70	5.28	.20	.00	.00	22.54
AV. PAN FACTOR	.00	.00	.00	.00	.38	.43	.75	.92	.92	.85	.00	.00	

SUNFLOWER	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	2.95	8.11	6.69	2.38	.00	.00	.00	20.92
AV. PAN FACTOR	.00	.00	.00	.00	.38	.48	.86	.92	.57	.00	.00	.00	

TOMATO	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.34	3.37	4.56	5.03	.20	.00	.00	13.51
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.64	.88	.84	.00	.00	

WINTER WHEAT	BEG 4/22	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.29	3.97	5.83	8.59	3.44	.35	.16	.00	.00	22.64
AV. PAN FACTOR	.00	.00	.00	.58	.78	.92	.91	.50	.12	.51	.93	.00	

SQUASH	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.24	2.72	3.99	.15	.00	.00	8.11
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.32	.39	.71	.75	.00	.00	

DAVENPORT 47.65 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	24.4	31.2	37.1	45.2	53.3	60.2	67.4	66.1	58.3	46.9	34.5	27.9	
TOTAL PRECIPITATION (IN)	1.99	1.38	1.33	1.10	1.33	.97	.59	.77	.82	1.03	1.95	2.21	15.47
EFFECTIVE PRECIP (IN)	.00	.06	.81	.77	.98	.77	.57	.66	.60	.65	.02	.00	5.90

ALFALFA	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.68	5.43	7.96	6.43	3.91	.22	.00	.00	25.62
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.93	6.09	8.86	7.17	4.38	.27	.00	.00	28.70
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.80	5.76	8.41	6.80	4.15	.24	.00	.00	27.16
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.53	6.74	10.65	8.66	5.10	.22	.00	.00	32.90
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 4/16		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.17	3.07	6.09	9.75	7.92	4.62	.16	.00	.00	31.77
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 5/ 4		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.49	6.74	10.65	8.66	5.10	.22	.00	.00	33.86
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	3.07	6.09	9.75	7.92	4.62	.16	.00	.00	31.65
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.02	6.09	9.75	7.92	4.62	.16	.00	.00	30.55
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.88	4.78	8.41	6.80	3.91	.07	.00	.00	24.85
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	1.80	4.13	7.51	6.05	2.72	.04	.00	.00	22.35
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.43	4.78	8.41	6.80	3.91	.07	.00	.00	25.40
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	1.80	4.13	7.51	6.05	2.72	.04	.00	.00	22.28
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.08	4.13	7.51	6.05	2.72	.04	.00	.00	21.53
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.36	7.06	6.05	3.43	.07	.00	.00	19.98
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.58	4.78	7.96	10.53	.00	.00	.00	.00	23.85
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.58	3.15	9.30	8.29	5.10	.30	.00	.00	26.72
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	4.33	7.07	10.20	7.92	3.43	.00	.00	.00	32.98
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	1.04	2.49	2.12	2.32	1.30	.00	.00	.00	9.31
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.47	5.78	8.29	2.64	.00	.00	.00	17.18
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.57	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.47	4.18	6.52	2.58	.00	.00	.00	13.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.98	5.93	8.75	.70	.00	.00	.00	.00	17.44
AV. PAN FACTOR	.00	.00	.00	.41	.47	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.65	6.21	7.84	4.64	.09	.00	.00	20.44
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.81	8.04	7.69	.00	.00	.00	.00	17.53
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.95	5.65	4.06	.00	.00	.00	.00	.00	11.74
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.47	3.60	5.62	3.91	.21	.00	.00	13.80
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	2.32	6.03	8.86	6.96	2.54	.00	.00	.00	26.78
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.75	5.05	4.06	.00	.00	.00	.00	.00	10.95
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	2.51	6.99	8.00	.00	.00	.00	.00	.00	17.58
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.66	7.17	7.92	4.44	.14	.00	.00	21.32
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.69	.92	.85	.65	.00	.00	

RADISH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	2.95	.00	.00	.00	.00	.00	.00	.00	3.03
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.95	5.95	9.75	4.45	.00	.00	.00	.00	22.18
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	.00	

SORGHUM — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.47	4.19	6.94	4.62	.14	.00	.00	16.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

SOYBEANS — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.77	7.24	7.55	4.54	.05	.00	.00	21.15
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	2.07	4.46	.00	.00	.00	.00	.00	.00	6.61
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.55	3.74	6.74	9.38	2.17	.00	.00	.00	.00	22.57
AV. PAN FACTOR	.00	.00	.00	.41	.75	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.08	1.65	4.43	9.55	7.92	4.68	.26	.00	.00	28.56
AV. PAN FACTOR	.00	.00	.00	.41	.42	.64	.90	.92	.89	.82	.00	.00	

SUNFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.77	5.50	9.75	6.06	.11	.00	.00	.00	23.27
AV. PAN FACTOR	.00	.00	.00	.41	.43	.77	.92	.72	.32	.00	.00	.00	

TOMATO — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.64	5.25	7.30	4.53	.03	.00	.00	18.74
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.37	4.75	6.74	7.49	.65	.00	.09	.00	.00	21.09
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.50	1.82	.00	

SQUASH — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.47	3.60	5.62	3.45	.00	.00	.00	13.14
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

DAYTON 46.32 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	32.2	38.2	42.5	48.7	56.3	63.4	70.9	69.3	61.7	51.4	40.4	35.3	
TOTAL PRECIPITATION (IN)	2.60	1.60	1.83	1.47	1.33	1.19	.45	.76	.89	1.50	2.22	2.79	18.63
EFFECTIVE PRECIP (IN)	.00	.53	1.15	1.04	.99	.96	.44	.67	.66	.96	.31	.00	7.72

ALFALFA BEG 5/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.36	5.73	8.90	6.92	4.25	.44	.00	.00	29.60
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.84	6.43	9.89	7.72	4.76	.60	.00	.00	33.23
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.60	6.08	9.39	7.32	4.50	.52	.00	.00	31.42
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/29 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.79	7.13	11.85	9.32	5.54	.44	.00	.00	38.07
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/29 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.61	3.51	6.43	10.87	8.52	5.02	.29	.00	.00	35.24
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/17 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	3.79	7.13	11.85	9.32	5.54	.44	.00	.00	38.14
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/ 7 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.14	3.51	6.43	10.87	8.52	5.02	.29	.00	.00	34.76
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/20 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.06	3.51	6.43	10.87	8.52	5.02	.29	.00	.00	34.68
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 4/29 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.38	5.02	9.39	7.32	4.25	.05	.00	.00	28.41
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 3/29	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.43	2.10	4.32	8.41	6.52	2.95	.00	.00	.00	24.73
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/17	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.38	5.02	9.39	7.32	4.25	.05	.00	.00	28.41
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 7	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.10	4.32	8.41	6.52	2.95	.00	.00	.00	24.30
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/20	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.10	4.32	8.41	6.52	2.95	.00	.00	.00	24.30
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/23	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.27	3.97	7.92	6.52	3.73	.05	.00	.00	22.45
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.24	5.02	8.90	11.31	.00	.00	.00	.00	26.48
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.24	3.26	10.38	8.92	5.54	.68	.00	.00	30.02
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.91	7.49	11.36	8.52	3.73	.00	.00	.00	36.00
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.26	2.56	2.51	2.52	1.40	.00	.00	.00	10.25
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/11	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.04	8.93	8.77	1.20	.00	.00	.00	19.94
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.76	.95	.51	.00	.00	.00	

GREEN BEANS	BEG 6/11		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.01	6.20	7.31	1.38	.00	.00	.00	15.90
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.54	.80	.78	.00	.00	.00	

CARROTS	BEG 4/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	33	4.05	6.72	3.82	.00	.00	.00	.00	.00	14.92
AV. PAN FACTOR	.00	.00	.00	.41	.72	.87	.72	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/23		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.26	2.44	8.66	8.52	4.71	.02	.00	.00	24.62
AV. PAN FACTOR	.00	.00	.00	.00	.35	.39	.74	.92	.83	.56	.00	.00	

SWEET CORN	BEG 5/23		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.26	2.94	10.24	5.85	.00	.00	.00	.00	19.29
AV. PAN FACTOR	.00	.00	.00	.00	.35	.44	.87	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	3.87	4.78	.00	.00	.00	.00	.00	.00	8.98
AV. PAN FACTOR	.00	.00	.00	.41	.69	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/11		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.01	4.98	6.68	4.25	.26	.00	.00	17.17
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.44	.74	.76	.68	.00	.00	

DRY ONION	BEG 4/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.44	4.46	6.43	9.84	6.54	.22	.00	.00	.00	27.93
AV. PAN FACTOR	.00	.00	.00	.43	.78	.84	.84	.72	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.30	3.26	4.68	.00	.00	.00	.00	.00	.00	8.24
AV. PAN FACTOR	.00	.00	.00	.40	.61	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.47	5.18	7.39	1.35	.00	.00	.00	.00	.00	14.40
AV. PAN FACTOR	.00	.00	.00	.44	.88	.95	.89	.00	.00	.00	.00	.00	

POTATO	BEG 5/23		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.26	2.54	9.65	8.52	4.31	.01	.00	.00	25.29
AV. PAN FACTOR	.00	.00	.00	.00	.35	.40	.82	.92	.77	.61	.00	.00	

RADISH BEG 4/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.95	3.72	.00	.00	.00	.00	.00	.00	.00	4.67
AV. PAN FACTOR	.00	.00	.00	.57	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 4/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	3.95	7.13	9.13	.53	.00	.00	.00	.00	21.07
AV. PAN FACTOR	.00	.00	.00	.41	.70	.92	.78	.28	.00	.00	.00	.00	

SORGHUM BEG 6/11 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.01	6.20	8.02	4.86	.09	.00	.00	20.19
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.54	.87	.86	.59	.00	.00	

SOYBEANS BEG 5/23 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.26	2.78	9.41	8.12	4.58	.00	.00	.00	25.15
AV. PAN FACTOR	.00	.00	.00	.00	.35	.43	.80	.88	.81	.47	.00	.00	

SPINACH BEG 4/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.34	4.11	.56	.00	.00	.00	.00	.00	.00	5.01
AV. PAN FACTOR	.00	.00	.00	.41	.73	.61	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 3/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.43	5.47	6.95	3.78	.00	.00	.00	.00	.00	18.63
AV. PAN FACTOR	.00	.00	.49	.75	.92	.90	.45	.00	.00	.00	.00	.00	

SUGAR BEET BEG 4/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.30	2.70	6.52	10.87	8.44	4.78	.05	.00	.00	33.66
AV. PAN FACTOR	.00	.00	.00	.40	.52	.85	.92	.91	.84	.80	.00	.00	

SUNFLOWER BEG 4/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.30	3.43	7.10	10.14	1.55	.00	.00	.00	.00	22.52
AV. PAN FACTOR	.00	.00	.00	.40	.63	.92	.86	.45	.00	.00	.00	.00	

TOMATO BEG 5/23 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.26	2.24	7.54	8.11	4.63	.00	.00	.00	22.77
AV. PAN FACTOR	.00	.00	.00	.00	.35	.36	.65	.88	.82	.47	.00	.00	

WINTER WHEAT BEG 3/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	3.13	5.47	5.59	1.36	.44	.00	.00	.00	.00	16.00
AV. PAN FACTOR	.00	.00	.73	.91	.92	.74	.30	.12	.12	.47	.86	.00	

SQUASH BEG 6/11 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.01	4.98	6.68	2.42	.00	.00	.00	15.08
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.44	.74	.70	.00	.00	.00	

ELLENSBURG A 46.97 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	26.2	33.0	40.9	47.0	54.5	61.8	67.1	67.6	58.3	46.9	34.5	26.1	
TOTAL PRECIPITATION (IN)	1.20	1.14	.67	.51	.54	.59	.34	.61	.64	.54	1.21	1.59	9.58
EFFECTIVE PRECIP (IN)	.00	.09	.42	.36	.44	.52	.33	.55	.48	.33	.00	.00	3.51

ALFALFA — BEG 5/13 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.91	6.43	8.84	7.03	3.99	.56	00	.00	29.76
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER — BEG 5/13 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.24	7.16	9.81	7.83	4.46	.64	.00	.00	33.15
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF — BEG 5/13 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.07	6.80	9.32	7.43	4.23	.60	.00	.00	31.46
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER — BEG 5/ 8 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.32	7.89	11.74	9.43	5.17	.56	.00	.00	38.11
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER — BEG 4/ 8 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.90	4.47	7.16	10.77	8.63	4.70	.47	.00	.00	37.11
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER — BEG 4/27 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	4.78	7.89	11.74	9.43	5.17	.56	.00	.00	39.65
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER — BEG 4/16 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.56	4.47	7.16	10.77	8.63	4.70	.47	.00	.00	36.77
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER — BEG 4/30 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.23	7.16	10.77	8.63	4.70	.47	.00	.00	35.97
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER — BEG 5/ 8 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.23	5.70	9.32	7.43	3.99	.35	.00	.00	29.03
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/ 8	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.76	2.94	4.97	8.36	6.63	2.82	.30	.00	.00	26.78
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/27	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	3.24	5.70	9.32	7.43	3.99	.35	.00	.00	30.11
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/16	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.47	2.94	4.97	8.36	6.63	2.82	.30	.00	.00	26.49
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/30	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.75	4.97	8.36	6.63	2.82	.30	.00	.00	25.83
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/29	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.07	4.60	7.88	6.63	3.52	.35	.00	.00	23.05
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/13	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.39	5.70	8.84	11.42	.00	.00	.00	.00	27.35
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/13	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.39	3.87	10.29	9.03	5.17	.68	.00	.00	30.43
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/22	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.25	6.01	8.26	11.26	8.63	3.52	.18	.00	.00	38.11
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/22	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.25	2.01	3.14	2.56	2.64	1.41	.09	.00	.00	12.12
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/15	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.10	7.90	9.02	1.76	.00	.00	.00	19.78
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.68	.96	.58	.00	.00	.00	

GREEN BEANS	BEG 6/15	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.10	5.49	7.37	1.86	.00	.00	.00	15.82
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.48	.79	.79	.00	.00	.00	

CARROTS	BEG 4/22	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	3.19	7.17	9.45	.19	.00	.00	.00	.00	20.33
AV. PAN FACTOR	.00	.00	.00	.39	.47	.84	.81	.65	.00	.00	.00	.00	

FIELD CORN	BEG 5/29	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.07	2.70	7.55	8.61	4.67	.38	.00	.00	23.98
AV. PAN FACTOR	.00	.00	.00	.00	.34	.35	.65	.92	.87	.59	.00	.00	

SWEET CORN	BEG 5/29	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.07	2.98	9.42	7.61	.00	.00	.00	.00	20.08
AV. PAN FACTOR	.00	.00	.00	.00	.34	.38	.81	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/22	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN) .	.00	.00	.00	.33	3.14	6.83	3.56	.00	.00	.00	.00	.00	13.87
AV. PAN FACTOR	.00	.00	.00	.39	.47	.80	.79	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/15	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.10	4.53	6.58	3.99	.50	.00	.00	16.70
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.40	.71	.76	.70	.00	.00	

DRY ONION	BEG 4/22	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	3.72	7.15	9.81	7.51	2.28	.00	.00	.00	30.80
AV. PAN FACTOR	.00	.00	.00	.39	.54	.84	.84	.81	.69	.00	.00	.00	

GREEN ONION	BEG 4/22	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	2.82	6.19	3.06	.00	.00	.00	.00	.00	12.41
AV. PAN FACTOR	.00	.00	.00	.39	.43	.73	.68	.00	.00	.00	.00	.00	

PEAS	BEG 4/22	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	4.04	8.24	7.75	.00	.00	.00	.00	.00	20.36
AV. PAN FACTOR	.00	.00	.00	.39	.58	.96	.93	.00	.00	.00	.00	.00	

POTATO	BEG 5/29	END 10/14											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.07	2.73	8.62	8.63	4.38	.21	.00	.00	24.64
AV. PAN FACTOR	.00	.00	.00	.00	.34	.35	.74	.92	.83	.64	.00	.00	

RADISH BEG 4/22 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.34	4.47	.00	.00	.00	.00	.00	.00	.00	4.81
AV. PAN FACTOR	.00	.00	.00	.40	.64	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 4/22 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	3.15	7.22	10.77	4.13	.00	.00	.00	.00	25.61
AV. PAN FACTOR	.00	.00	.00	.39	.47	.65	.92	.55	.00	.00	.00	.00	

SORGHUM BEG 6/15 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.10	5.49	7.97	4.62	.38	.00	.00	19.57
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.48	.85	.87	.59	.00	.00	

SOYBEANS BEG 5/29 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.07	2.90	8.57	8.23	4.55	.31	.00	.00	24.63
AV. PAN FACTOR	.00	.00	.00	.00	.34	.37	.74	.88	.85	.53	.00	.00	

SPINACH BEG 4/22 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	3.36	4.79	.00	.00	.00	.00	.00	.00	8.49
AV. PAN FACTOR	.00	.00	.00	.39	.50	.78	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 3/28 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.03	2.21	5.95	7.89	9.81	1.55	.00	.00	.00	.00	27.44
AV. PAN FACTOR	.00	.00	.50	.51	.83	.92	.84	.36	.00	.00	.00	.00	

SUGAR BEET BEG 4/22 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.33	2.63	5.52	10.66	8.63	4.75	.62	.00	.00	33.14
AV. PAN FACTOR	.00	.00	.00	.39	.40	.66	.91	.92	.89	.82	.00	.00	

SUNFLOWER BEG 4/22 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	2.85	6.77	10.77	5.99	.00	.00	.00	.00	26.73
AV. PAN FACTOR	.00	.00	.00	.39	.43	.80	.92	.66	.00	.00	.00	.00	

TOMATO BEG 5/29 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.07	2.62	6.48	8.09	4.54	.28	.00	.00	22.09
AV. PAN FACTOR	.00	.00	.00	.00	.34	.34	.56	.87	.85	.50	.00	.00	

WINTER WHEAT BEG 3/28 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.05	3.53	6.61	7.89	7.22	.32	.07	.62	.00	.00	26.31
AV. PAN FACTOR	.00	.00	.65	.78	.92	.92	.63	.23	.12	.50	.00	.00	

SQUASH BEG 6/15 END 10/14

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.10	4.53	6.58	2.83	.00	.00	.00	15.03
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.40	.71	.71	.00	.00	.00	

ELMA 47.00 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
:AN TEMPERATURE (F)	39.3	42.9	44.3	49.0	54.7	59.5	63.4	63.5	60.0	52.6	44.7	41.1	
)TAL PRECIPITATION (IN)	11.05	7.79	7.30	4.47	2.52	2.00	1.02	1.66	2.91	6.31	9.43	11.14	67.60
:FECTIVE PRECIP (IN)	.08	.57	1.34	2.16	1.74	1.40	.73	1.15	1.85	1.43	.33	.03	12.80

.FALFA BEG 5/12 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.21	1.77	2.86	1.67	.32	.00	.00	.00	6.82
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

ωLOVER BEG 5/12 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.50	2.33	3.49	2.17	.70	.02	.00	.00	9.21
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/12 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.41	2.14	3.28	2.00	.57	.00	.00	.00	8.40
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/10 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.01	2.70	4.33	2.83	1.08	.00	.00	.00	10.96
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/10 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.58	3.07	1.84	.32	.00	.00	.00	6.80
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/10 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.38	2.64	1.50	.06	.00	.00	.00	4.60
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/17 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.82	3.07	4.33	2.67	.32	.00	.00	.00	12.21
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/17 END 11/16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.47	.54	.18	.00	.00	.00	.00	1.18
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 7/20		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.33	.82	.52	.00	.00	.00	1.66
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.39	.47	.74	.74	.00	.00	

CARROTS	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.79	1.28	.00	.00	.00	.00	.00	.00	3.07
AV. PAN FACTOR	.00	.00	.55	.63	.83	.75	.00	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.00	2.32	.96	.00	.00	.00	5.28
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.52	.84	.88	.65	.00	.00	

SWEET CORN	BEG 6/10		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.59	2.50	.00	.00	.00	.00	5.09
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.63	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.60	.26	.00	.00	.00	.00	.00	.00	1.86
AV. PAN FACTOR	.00	.00	.55	.62	.79	.71	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/20		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.33	.61	.26	.00	.00	.00	1.20
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.39	.43	.66	.72	.68	.00	

DRY ONION	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.48	2.14	3.06	.46	.00	.00	.00	.00	7.15
AV. PAN FACTOR	.00	.00	.55	.66	.76	.76	.72	.63	.00	.00	.00	.00	

GREEN ONION	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.41	.27	.00	.00	.00	.00	.00	.00	1.68
AV. PAN FACTOR	.00	.00	.55	.59	.74	.72	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.16	1.13	.00	.00	.00	.00	.00	.00	3.29
AV. PAN FACTOR	.00	.00	.55	.74	.92	.88	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.22	2.47	.89	.00	.00	.00	5.58
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.56	.87	.86	.66	.00	.00	

RADISH	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AV. PAN FACTOR	.00	.00	.57	.63	.00	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.37	.00	.00	.00	.00	.00	.00	.00	.37
AV. PAN FACTOR	.00	.00	.55	.64	.75	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/11		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.30	1.99	1.32	.01	.00	.00	.00	.00	.00	3.62
AV. PAN FACTOR	.00	.69	.75	.88	.88	.58	.22	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.74	2.04	.83	.00	.00	.00	4.60
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.47	.77	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/11		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.23	.30	1.75	.00	.00	.00	.00	.00	.00	.00	2.29
AV. PAN FACTOR	.00	1.08	.92	.88	.82	.39	.12	.12	.12	.54	.84	1.84	

ELTOPIA 4 46.40 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	30.3	38.3	45.5	50.3	57.5	63.9	69.9	69.3	61.3	51.2	39.0	31.9	
TOTAL PRECIPITATION (IN)	.97	1.10	.87	.68	.62	.60	.20	.59	.52	.65	1.26	1.27	9.33
EFFECTIVE PRECIP (IN)	.00	.40	.58	.50	.52	.55	.20	.56	.42	.43	.28	.00	4 44

ALFALFA BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.53	7.14	9.51	7.72	5.09	1.84	.00	.00	36.83
AV. PAN FACTOR	.76	.76	.76	76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.18	7.95	10.53	8.59	5.67	2.10	.00	.00	41.02
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.86	7.55	10.02	8.16	5.38	1.97	.00	.00	38.92
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.14	5.15	8.76	12.57	10.34	6.54	1.84	.00	.00	45.33
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/29 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.54	4.82	7.95	11.55	9.47	5.96	1.57	.00	.00	42.86
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/15 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.63	5.15	8.76	12.57	10.34	6.54	1.84	.00	.00	45.83
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.04	4.82	7.95	11.55	9.47	5.96	1.57	.00	.00	42.35
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/18 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.50	4.82	7.95	11.55	9.47	5.96	1.57	.00	.00	41.81
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/H COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	3.48	6.33	10.02	8.16	5.09	1.18	.00	.00	34.38
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 3/29	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.31	3.15	5.52	8.99	7.29	3.64	1.05	.00	.00	30.96
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	
CHERRY W/O COVER	BEG 4/15	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.53	3.48	6.33	10.02	8.16	5.09	1.18	.00	.00	34.79
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	
PEACH W/O COVER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.86	3.15	5.52	8.99	7.29	3.64	1.05	.00	.00	30.51
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	
PEAR & PLUM W/O COVER	BEG 4/18	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.41	3.15	5.52	8.99	7.29	3.64	1.05	.00	.00	30.06
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	
GRAPES	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	5.12	8.48	7.29	4.51	1.18	.00	.00	27.43
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	
HOPS	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.63	6.33	9.51	12.52	.00	.00	.00	.00	30.98
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	
MINT	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.63	4.31	11.04	9.90	6.54	2.23	.00	.00	36.65
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	
RASPBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.86	6.48	9.16	12.06	9.47	4.51	.66	.00	.00	43.21
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	
STRAWBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.86	2.15	3.50	2.87	2.93	1.90	.40	.00	.00	14.60
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	
BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.57	10.86	8.99	.60	.00	.00	.00	23.02
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.87	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.20	7.92	8.12	.50	.00	.00	.00	18.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.11	5.16	8.32	4.75	.00	.00	.00	.00	.00	19.34
AV. PAN FACTOR	.00	.00	.00	.38	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	3.47	9.81	9.47	5.31	.25	.00	.00	29.08
AV. PAN FACTOR	.00	.00	.00	.00	.33	.40	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	4.29	11.22	5.34	.00	.00	.00	.00	21.62
AV. PAN FACTOR	.00	.00	.00	.00	.33	.48	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.11	4.96	6.64	.00	.00	.00	.00	.00	.00	12.71
AV. PAN FACTOR	.00	.00	.00	.38	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.13	6.32	7.69	5.04	.62	.00	.00	21.80
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.21	5.76	7.95	10.50	7.37	.56	.00	.00	.00	33.35
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.10	4.20	6.49	.00	.00	.00	.00	.00	.00	11.79
AV. PAN FACTOR	.00	.00	.00	.37	.57	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.24	6.57	9.09	2.17	.00	.00	.00	.00	.00	19.08
AV. PAN FACTOR	.00	.00	.00	.41	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	3.68	10.76	9.45	4.39	.00	.00	.00	29.05
AV. PAN FACTOR	.00	.00	.00	.00	.33	.42	.86	.92	.74	.00	.00	.00	

ELTOPIA*

RADISH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.85	5.08	.00	.00	.00	.00	.00	.00	.00	6.93
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.11	5 00	8.76	10.14	.91	.00	.00	.00	.00	25.92
AV. PAN FACTOR	.00	.00	.00	.38	.66	.92	.81	.31	.00	.00	.00	.00	

SORGHUM — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.20	8.03	9.03	5.45	.46	.00	.00	25.17
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.88	.81	.54	.00	.00	

SOYBEANS — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	4.00	10.41	9.03	5.15	.17	.00	.00	29.53
AV. PAN FACTOR	.00	.00	.00	.00	.33	.45	.83	.88	.77	.43	.00	.00	

SPINACH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.11	5.32	1.43	.00	.00	.00	.00	.00	.00	7.87
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.35	2.96	7.14	8.76	6.85	.00	.00	.00	.00	.00	26.07
AV. PAN FACTOR	.00	.00	.44	.61	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.10	3.54	7.86	11.55	9.41	5.71	.26	.00	.00	39.41
AV. PAN FACTOR	.00	.00	.00	.37	.49	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.10	4.36	8.66	11.02	2.20	.00	.00	.00	.00	27.35
AV. PAN FACTOR	.00	.00	.00	.37	.59	.91	.88	.47	.00	.00	.00	.00	

TOMATO — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	3.12	8.68	9.03	5.23	.30	.00	.00	27.12
AV. PAN FACTOR	.00	.00	.00	.00	.33	.36	.70	.88	.78	.43	.00	.00	

WINTER WHEAT — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.70	4.39	7.15	8.04	3.22	.72	.35	.81	.00	.00	25.38
AV. PAN FACTOR	.00	.00	.62	.87	.92	.85	.39	.12	.12	.45	.75	.00	

SQUASH — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.13	6.32	7.67	1.83	.00	.00	.00	17.95
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.65	.00	.00	.00	

EPHRATA 47.30 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	26.2	34.3	41.8	50.8	60.3	68.1	75.6	73.6	64.9	51.7	37.4	29.8	
TOTAL PRECIPITATION (IN)	.99	.67	.62	.53	.54	.53	.25	.28	.32	.49	.92	1.14	7.28
EFFECTIVE PRECIP (IN)	.00	.12	.40	.40	.47	.51	.25	.27	.27	.32	.11	.00	3.12

ALFALFA BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.06	7.89	10.54	8.73	5.71	2.02	.00	.00	40.95
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.76	8.77	11.67	9.67	6.34	2.29	.00	.00	45.50
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.41	8.33	11.10	9.20	6.02	2.15	.00	.00	43.22
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	5.62	9.66	13.94	11.57	7.28	2.02	.00	.00	50.24
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/29 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.68	5.26	8.77	12.81	10.62	6.65	1.76	.00	.00	47.56
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/15 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.72	5.62	9.66	13.94	11.57	7.28	2.02	.00	.00	50.81
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.18	5.26	8.77	12.81	10.62	6.65	1.76	.00	.00	47.05
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/18 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.57	5.26	8.77	12.81	10.62	6.65	1.76	.00	.00	46.43
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	3.83	7.01	11.10	9.20	5.71	1.36	.00	.00	38.33
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 3/29		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.45	3.47	6.12	9.97	8.25	4.13	1.23	.00	.00	34.63
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/15		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.61	3.83	7.01	11.10	9.20	5.71	1.36	.00	.00	38.82
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.01	3.47	6.12	9.97	8.25	4.13	1.23	.00	.00	34.18
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/18		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.48	3.47	6.12	9.97	8.25	4.13	1.23	.00	.00	33.65
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/19		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.95	5.68	9.40	8.25	5.08	1.36	.00	.00	30.72
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.94	7.01	10.54	13.94	.00	.00	.00	.00	34.42
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.94	4.79	12.24	11.09	7.28	2.42	.00	.00	40.77
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.01	7.05	10.10	13.37	10.62	5.08	.83	.00	.00	48.06
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.01	2.39	3.91	3.16	3.52	2.25	.57	.00	.00	16.80
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/ 4		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.84	12.02	10.10	.72	.00	.00	.00	25.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.86	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.43	8.74	9.16	.57	.00	.00	.00	20.90
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.63	.80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.25	5.62	9.18	5.26	.00	.00	.00	.00	.00	21.31
AV. PAN FACTOR	.00	.00	.00	.37	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	3.80	10.85	10.62	5.95	.29	.00	.00	32.36
AV. PAN FACTOR	.00	.00	.00	.00	.33	.39	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	4.71	12.44	6.01	.00	.00	.00	.00	24.01
AV. PAN FACTOR	.00	.00	.00	.00	.33	.47	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.25	5.40	7.37	.00	.00	.00	.00	.00	.00	14.02
AV. PAN FACTOR	.00	.00	.00	.37	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.35	6.93	8.69	5.66	.70	.00	.00	24.32
AV. PAN FACTOR	.00	.00	.00	.00	.00	.30	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.35	6.27	8.77	11.64	8.34	.64	.00	.00	.00	37.01
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.23	4.59	7.20	.00	.00	.00	.00	.00	.00	13.03
AV. PAN FACTOR	.00	.00	.00	.37	.57	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.38	7.14	10.02	2.41	.00	.00	.00	00	.00	20.95
AV. PAN FACTOR	.00	.00	.00	.40	.85	.95	.90	.00	.00	.00			

POTATO	BEG 5/19	END 10/31								
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	4.04	11.92	10.60	4.98	.00
AV. PAN FACTOR	.00	.00	.00	.00	.33	.41	.86	.92	.74	.00

RADISH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.00	5.54	.00	.00	.00	.00	.00	.00	.00	7.55
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.25	5.45	9.66	11.24	1.10	.00	.00	.00	.00	28.70
AV. PAN FACTOR	.00	.00	.00	.37	.66	.92	.81	.31	.00	.00	.00	.00	

SORGHUM — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.43	8.85	10.15	6.09	.54	.00	.00	28.06
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.64	.88	.81	.54	.00	.00	

SOYBEANS — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	4.39	11.53	10.15	5.77	.21	.00	.00	32.89
AV. PAN FACTOR	.00	.00	.00	.00	.33	.44	.83	.88	.77	.43	.00	.00	

SPINACH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.25	5.80	1.59	.00	.00	.00	.00	.00	.00	8.64
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.41	3.22	7.76	9.66	7.58	.00	.00	.00	.00	.00	28.62
AV. PAN FACTOR	.00	.00	.47	.63	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.23	3.87	8.67	12.81	10.56	6.38	.28	.00	.00	43.79
AV. PAN FACTOR	.00	.00	.00	.37	.48	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.23	4.76	9.55	12.22	2.57	.00	.00	.00	.00	30.34
AV. PAN FACTOR	.00	.00	.00	.37	.58	.91	.88	.47	.00	.00	.00	.00	

TOMATO — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	3.41	9.58	10.15	5.86	.36	.00	.00	30.21
AV. PAN FACTOR	.00	.00	.00	.00	.33	.36	.69	.88	.78	.43	.00	.00	

WINTER WHEAT — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.73	4.63	7.77	8.87	3.56	1.14	.62	.98	.00	.00	28.30
AV. PAN FACTOR	.00	.00	.66	.87	.92	.85	.39	.12	.12	.45	.82	.00	

SQUASH — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.35	6.93	8.67	2.09	.00	.00	.00	20.04
AV. PAN FACTOR	.00	.00	.00	.00	.00	.30	.51	.76	.65	.00	.00	.00	

EVERETT 47.98 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.4	42.0	43.8	48.6	54.3	59.2	62.9	62.5	58.2	51.4	44.0	40.7	
TOTAL PRECIPITATION (IN)	4.77	3.48	3.52	2.58	2.24	2.06	1.08	1.55	2.06	3.19	4.48	5.22	36.23
EFFECTIVE PRECIP (IN)	.20	.68	1.44	1.69	1.60	1.48	.81	1.12	1.40	1.35	.38	.10	12.26

ALFALFA BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.61	2.46	3.90	2.59	1.18	.00	.00	.00	10.75
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.92	3.15	4.73	3.25	1.64	.06	.00	.00	13.77
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.82	2.92	4.46	3.03	1.49	.00	.00	.00	12.72
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.45	3.62	5.84	4.13	2.10	.00	.00	.00	16.14
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.23	4.18	2.81	1.18	.00	.00	.00	10.40
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/10 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.75	3.63	2.38	.88	.00	.00	.00	7.63
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.63	4.08	5.84	3.91	1.18	.00	.00	.00	17.64
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.01	.84	.85	.63	.00	.00	.00	.00	2.32
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.93	2.03	1.49	.00	.00	.00	4.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.14	3.27	1.13	.00	.00	.00	.00	.00	6.54
AV. PAN FACTOR	.00	.00	.00	.46	.74	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.06	2.65	3.44	1.94	.00	.00	.00	8.08
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.06	3.47	3.69	.34	.00	.00	.00	7.55
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.99	1.60	.00	.00	.00	.00	.00	.00	3.59
AV. PAN FACTOR	.00	.00	.00	.45	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.93	1.48	1.29	.00	.00	.00	3.71
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.10	2.92	4.40	1.92	.00	.00	.00	.00	11.34
AV. PAN FACTOR	.00	.00	.00	.48	.73	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.63	1.56	.00	.00	.00	.00	.00	.00	3.20
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.84	3.16	.00	.00	.00	.00	.00	.00	6.00
AV. PAN FACTOR	.00	.00	.00	.50	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.06	2.94	3.65	1.86	.00	.00	.00	8.51
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

RADISH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	00	.00	1.54	.00	.00	.00	.00	.00	.00	.00	1.54
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.03	.00	.00	.00	.00	.00	.00	.00	2.03
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	00	.00	1.30	2.83	2.25	.11	.00	.00	.00	.00	.00	6.49
AV. PAN FACTOR	.00	.66	.71	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.06	2.28	3.06	1.79	.00	.00	.00	7.19
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.45	.76	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	1.32	2.66	.30	.00	.00	.00	.00	.00	.00	4.52
AV. PAN FACTOR	.00	1.01	.92	.88	.85	.42	.12	.12	.12	.54	.81	1.22	

SQUASH	BEG 7/ 9		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.93	1.48	1.29	.00	.00	.00	3.71
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.48	.71	.65	.00	.00	

GOLDENDALE # 45.82 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	29.0	35.5	41.5	45.5	52.0	57.5	66.0	65.5	56.5	48.0	37.5	32.0	
TOTAL PRECIPITATION (IN)	2.32	2.15	1.44	.94	.73	.69	.32	.72	.74	1.13	2.45	3.20	16.83
EFFECTIVE PRECIP (IN)	.00	.16	.59	.40	.51	.50	.27	.55	.52	.61	.05	.00	4.45

ALFALFA — BEG 4/ 3 — END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.12	6.04	4.49	3.27	.03	.00	.00	16.95
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

PASTURE (TALL) — BEG 4/ 3 — END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.31	6.37	4.76	3.47	.04	.00	.00	17.95
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

FIELD CORN — BEG 4/24 — END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.24	3.05	4.32	4.07	.08	.00	.00	11.76
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.40	.73	.92	.89	.00	.00	

SPRING GRAIN — BEG 4/22 — END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.87	4.45	7.37	4.47	.23	.00	.00	.00	18.43
AV. PAN FACTOR	.00	.00	.00	.49	.53	.88	.92	.76	.29	.00	.00	.00	

WINTER WHEAT — BEG 4/22 — END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.14	3.09	4.68	7.32	2.57	.00	.00	.00	.00	17.81
AV. PAN FACTOR	.00	.00	.00	.65	.81	.92	.91	.50	.12	.55	1.48	.00	

GRAPEVIEW 47.30 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	39.4	42.6	44.5	49.4	55 6	60.3	64.4	64.4	59.9	52.1	44.9	41.2	
TOTAL PRECIPITATION (IN)	8.63	6.30	5.20	3 76	1.88	1.43	.92	1.31	2.36	4.74	7 50	8.74	52.27
EFFECTIVE PRECIP (IN)	.14	.73	1.56	2.11	1 35	1.06	.73	.97	1.65	1.60	.46	.10	12.45

ALFALFA BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.35	3.35	4.68	3.51	1.38	.00	.00	.00	14.28
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.81	4.13	5.63	4.30	1.92	.03	.00	.00	17.82
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.65	3.87	5.32	4.04	1.74	.00	.00	.00	16 62
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.37	4.65	6.91	5.36	2.45	.00	.00	.00	20.73
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.58	3.10	5.00	3.77	1.38	.00	.00	.00	13.83
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.91	4.36	3.25	1.02	.00	.00	.00	10.54
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.56	5.17	6.91	5.09	1.38	.00	.00	.00	22.11
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.52	1.54	1.18	1.14	.00	.00	.00	.00	4.37
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.32	3.52	.90	.00	.00	.00	6.74
AV. PAN FACTOR	.00	.00	.00	.00	00	.36	.38	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	3.27	4.14	.80	.00	.00	.00	.00	.00	8.23
AV. PAN FACTOR	.00	.00	.52	.55	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.78	3.83	4.74	2.20	.00	.00	.00	11.55
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.57	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.84	4.98	4.77	.08	.00	.00	.00	10.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.08	1.88	.00	.00	.00	.00	.00	.00	4.95
AV. PAN FACTOR	.00	.00	.52	.55	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.16	2.85	1.56	.00	.00	.00	6.57
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	3.05	3.87	5.20	2.40	.00	.00	.00	.00	14.62
AV. PAN FACTOR	.00	.00	.52	.57	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.73	1.87	.00	.00	.00	.00	.00	.00	4.60
AV. PAN FACTOR	.00	.00	.52	.53	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	3.96	3.81	.00	.00	.00	.00	.00	.00	7.99
AV. PAN FACTOR	.00	.00	.52	.61	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.78	4.39	4.83	2.01	.00	.00	.00	12.01
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.64	.88	.82	.62	.00	.00	

RADISH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.24	.11	.00	.00	.00	.00	.00	.00	.00	.34
AV. PAN FACTOR	.00	.00	.52	.61	.61	00	00	.00	.00	.00	.00	.00	

SPINACH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	2.14	.00	.00	.00	00	.00	.00	.00	2.17
AV. PAN FACTOR	.00	.00	.52	.56	74	.00	.00	00	.00	.00	.00	.00	

SPRING GRAIN BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.25	3.80	3.12	.18	.00	.00	.00	.00	.00	8.35
AV. PAN FACTOR	.00	.64	.70	.87	.88	.64	.26	.00	.00	.00	.00	.00	

SUGAR BEET BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.56	4.55	6.27	4.70	.93	.00	.00	.00	19.02
AV. PAN FACTOR	.00	.00	.52	.52	.67	.86	.88	.86	.79	.00	.00	.00	

SUNFLOWER BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.09	4.65	5.12	.19	.00	.00	.00	.00	13.05
AV. PAN FACTOR	.00	.00	.52	.53	.76	.88	.74	.38	.00	.00	.00	.00	

TOMATO BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.77	3.24	4.35	2.08	.00	.00	.00	10.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.56	.50	.81	.84	.55	.00	.00	

WINTER WHEAT BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	1.27	3.60	1.06	.03	.00	.00	.00	.00	.00	6.21
AV. PAN FACTOR	.00	.98	.91	.88	.85	.42	.12	.12	.12	.52	.76	1.24	

SQUASH BEG 6/29 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.16	2.85	1.52	.00	.00	.00	6.53
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.71	.60	.00	.00	

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.32	3.52	.90	.00	.00	.00	6.74
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.38	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	3.27	4.14	.80	.00	.00	.00	.00	.00	8.23
AV. PAN FACTOR	.00	.00	.52	.55	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.78	3.83	4.74	2.20	.00	.00	.00	11.55
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.57	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.84	4.98	4.77	.08	.00	.00	.00	10.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.08	1.88	.00	.00	.00	.00	.00	.00	4.95
AV. PAN FACTOR	.00	.00	.52	.55	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.16	2.85	1.56	.00	.00	.00	6.57
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	3.05	3.87	5.20	2.40	.00	.00	.00	.00	14.62
AV. PAN FACTOR	.00	.00	.52	.57	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.73	1.87	.00	.00	.00	.00	.00	.00	4.60
AV. PAN FACTOR	.00	.00	.52	.53	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	3.96	3.81	.00	.00	.00	.00	.00	.00	7.99
AV. PAN FACTOR	.00	.00	.52	.61	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.78	4.39	4.83	2.01	.00	.00	.00	12.01
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.64	.88	.82	.62	.00	.00	

RADISH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.24	.11	.00	.00	.00	.00	.00	.00	.00	.34
AV. PAN FACTOR	.00	.00	.52	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	2.14	.00	.00	00	.00	.00	.00	.00	2.17
AV. PAN FACTOR	.00	.00	.52	.56	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.25	3.80	3.12	.18	.00	.00	.00	.00	.00	8.35
AV. PAN FACTOR	.00	.64	.70	.87	.88	.64	.26	.00	.00	.00	.00	.00	

SUGAR BEET BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.56	4.55	6.27	4.70	.93	.00	.00	.00	19.02
AV. PAN FACTOR	.00	.00	.52	.52	.67	.86	.88	.86	.79	.00	.00	.00	

SUNFLOWER BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.09	4.65	5.12	.19	.00	.00	.00	.00	13.05
AV. PAN FACTOR	.00	.00	.52	.53	.76	.88	.74	.38	.00	.00	.00	.00	

TOMATO BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.77	3.24	4.35	2.08	.00	.00	.00	10.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	1.27	3.60	1.06	.03	.00	.00	.00	.00	.00	6.21
AV. PAN FACTOR	.00	.98	.91	.88	.85	.42	.12	.12	.12	.52	.76	1.24	

SQUASH BEG 6/29 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.16	2.85	1.52	.00	.00	.00	6.53
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.71	.60	.00	.00	

HATTON 46.75 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	28.8	36.5	41.8	49.0	57.1	64.8	72.1	69.9	62.1	50.2	38.1	32.0	
TOTAL PRECIPITATION (IN)	1.27	.90	.81	.71	.84	.59	26	.47	.43	.82	1.27	1.48	9.85
EFFECTIVE PRECIP (IN)	.00	.16	.53	.51	.68	.54	.25	.46	.35	.54	.25	.00	4.28

ALFALFA BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.28	7.31	9.86	7.94	5.26	1.57	.00	.00	37.23
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.92	8.13	10.93	8.82	5.86	1.82	.00	.00	41.49
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.60	7.72	10.39	8.38	5.56	1.70	.00	.00	39.36
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	4.95	8.96	13.06	10.59	6.74	1.57	.00	.00	46.00
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/29 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.45	4.62	8.13	11.99	9.71	6.15	1.32	.00	.00	43.38
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/15 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.58	4.95	8.96	13.06	10.59	6.74	1.57	.00	.00	46.46
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.96	4.62	8.13	11.99	9.71	6.15	1.32	.00	.00	42.88
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/18 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.46	4.62	8.13	11.99	9.71	6.15	1.32	.00	.00	42.38
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	3.30	6.48	10.39	8.38	5.26	.94	.00	.00	34.86
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 3/29		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.23	2.97	5.65	9.33	7.50	3.79	.82	.00	.00	31.28
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/15		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.48	3.30	6.48	10.39	8.38	5.26	.94	.00	.00	35.24
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	2.97	5.65	9.33	7.50	3.79	.82	.00	.00	30.84
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/18		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.38	2.97	5.65	9.33	7.50	3.79	.82	.00	.00	30.43
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/19		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.76	5.24	8.80	7.50	4.67	.94	.00	.00	27.91
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.39	6.48	9.86	12.80	.00	.00	.00	.00	31.54
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.39	4.41	11.46	10.15	6.74	1.95	.00	.00	37.11
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	6.28	9.37	12.52	9.71	4.67	.44	.00	.00	43.79
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	1.97	3.59	2.94	3.08	2.01	.19	.00	.00	14.57
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/ 4		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.62	11.27	9.23	.64	.00	.00	.00	23.76
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.87	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.25	8.20	8.35	.52	.00	.00	.00	19.32
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	4.98	8.51	4.92	.00	.00	.00	.00	.00	19.46
AV. PAN FACTOR	.00	.00	.00	.38	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	3.56	10.18	9.71	5.49	.19	.00	.00	29.83
AV. PAN FACTOR	.00	.00	.00	.00	.34	.40	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	4.40	11.65	5.49	.00	.00	.00	.00	22.23
AV. PAN FACTOR	.00	.00	.00	.00	.34	.48	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	4.78	6.80	.00	.00	.00	.00	.00	.00	12.63
AV. PAN FACTOR	.00	.00	.00	.38	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.18	6.52	7.90	5.22	.52	.00	.00	22.34
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	5.57	8.13	10.90	7.58	.58	.00	.00	.00	33.90
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.03	4.03	6.65	.00	.00	.00	.00	.00	.00	11.71
AV. PAN FACTOR	.00	.00	.00	.38	.57	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.17	6.37	9.30	2.26	.00	.00	.00	.00	.00	19.10
AV. PAN FACTOR	.00	.00	.00	.41	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	3.78	11.17	9.69	4.56	.00	.00	.00	29.89
AV. PAN FACTOR	.00	.00	.00	.00	.34	.42	.86	.92	.74	.00	.00	.00	

DISH BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.74	4.88	.00	.00	.00	.00	.00	.00	.00	6.63
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

FFLOWER BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	4.83	8.96	10.52	.96	.00	.00	.00	.00	26.31
AV. PAN FACTOR	.00	.00	.00	.38	.66	.92	.81	.31	.00	.00	.00	.00	

RGHUM BEG 6/ 4 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.25	8.31	9.27	5.63	.36	.00	.00	25.82
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.88	.81	.54	.00	.00	

'BEANS BEG 5/19 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	4.10	10.80	9.27	5.32	.12	.00	.00	30.30
AV. PAN FACTOR	.00	.00	.00	.00	.34	.45	.83	.88	.77	.43	.00	.00	

NACH BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	5.13	1.47	.00	.00	.00	.00	.00	.00	7.65
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

ING GRAIN BEG 3/12 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.30	2.90	6.93	8.96	7.09	.00	.00	.00	.00	.00	26.18
AV. PAN FACTOR	.00	.00	.47	.63	.92	.92	.55	.00	.00	.00	.00	.00	

AR BEET BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.03	3.38	8.04	11.99	9.65	5.90	.22	.00	.00	40.21
AV. PAN FACTOR	.00	.00	.00	.38	.49	.83	.92	.91	.85	.81	.00	.00	

LOWER BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.03	4.19	8.86	11.44	2.30	.00	.00	.00	.00	27.83
AV. PAN FACTOR	.00	.00	.00	.38	.59	.91	.88	.47	.00	.00	.00	.00	

TO BEG 5/19 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	3.20	9.00	9.27	5.41	.21	.00	.00	27.77
AV. PAN FACTOR	.00	.00	.00	.00	.34	.36	.70	.88	.78	.43	.00	.00	

'R WHEAT BEG 3/12 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ITHLY NET IRRIG REQUIRE(IN)	.00	.00	.62	4.23	6.94	8.23	3.32	.86	.46	.60	.00	.00	25.26
AV. PAN FACTOR	.00	.00	.66	.87	.92	.85	.39	.12	.12	.45	.78	.00	

H BEG 6/ 4 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.18	6.52	7.89	1.91	.00	.00	.00	18.50
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.65	.00	.00	.00	

HOQUIAM 46.97 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	40.5	43.3	44.3	47.9	52.9	56.8	59.9	60.6	59.2	53.0	46.0	42.1	
TOTAL PRECIPITATION (IN)	10.95	8.22	7.71	4.53	2.96	2.09	1.22	1.78	3.57	6.66	9.93	11.60	71.22
EFFECTIVE PRECIP (IN)	.14	.59	1.34	2.09	1.96	1.45	.87	1.22	2.12	1.45	.39	.07	13.68

ALFALFA	BEG 5/12		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.51	2.43	1.40	.00	.00	.00	.00	5.33
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/12		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.15	2.03	3.01	1.86	.37	.02	.00	.00	7.44
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/12		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.05	1.85	2.81	1.71	.25	.00	.00	.00	6.68
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 5/10		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.37	3.78	2.48	.75	.00	.00	.00	9.38
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 5/10		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.33	2.62	1.55	.00	.00	.00	.00	5.51
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 6/10		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.22	2.23	1.25	.00	.00	.00	.00	3.70
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.41	2.72	3.78	2.33	.00	.00	.00	.00	10.24
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.29	.29	.01	.00	.00	.00	.00	.60
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

HOQUIAM

GREEN BEANS	BEG 7/20	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.23	.64	.20	.00	.00	.00	1.06
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.40	.48	.74	.74	.00	.00	

CARROTS	BEG 3/17	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.38	1.00	.00	.00	.00	.00	.00	.00	2.38
AV. PAN FACTOR	.00	.00	.55	.63	.83	.75	.00	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.68	2.01	.62	.00	.00	.00	4.30
AV. PAN FACTOR	.00	.00	.00	.00	.00	.41	.52	.84	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.21	2.17	.00	.00	.00	.00	4.38
AV. PAN FACTOR	.00	.00	.00	.00	.00	.41	.63	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/17	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.20	.20	.00	.00	.00	.00	.00	.00	1.40
AV. PAN FACTOR	.00	.00	.55	.62	.79	.71	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/20	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.23	.45	.00	.00	.00	.00	.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.40	.43	.66	.72	.68	.00	

DRY ONION	BEG 3/17	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.09	1.85	2.62	.31	.00	.00	.00	.00	5.88
AV. PAN FACTOR	.00	.00	.55	.66	.76	.76	.72	.63	.00	.00	.00	.00	

GREEN ONION	BEG 3/17	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.02	.21	.00	.00	.00	.00	.00	.00	1.23
AV. PAN FACTOR	.00	.00	.55	.59	.74	.72	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/17	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.73	.93	.00	.00	.00	.00	.00	.00	2.66
AV. PAN FACTOR	.00	.00	.55	.74	.92	.88	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/16											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.87	2.15	.56	.00	.00	.00	4.57
AV. PAN FACTOR	.00	.00	.00	.00	.00	.41	.56	.87	.86	.66	.00	.00	

RADISH	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AV. PAN FACTOR	.00	.00	.57	.63	.00	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/17		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00	.00	.04
AV. PAN FACTOR	.00	.00	.55	.64	.75	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/11		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.27	1.57	1.09	.00	.00	.00	.00	.00	.00	2.93
AV. PAN FACTOR	.00	.69	.75	.88	.88	.58	.22	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.44	1.75	.50	.00	.00	.00	3.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.41	48	.77	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/11		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.23	.27	1.35	.00	.00	.00	.00	.00	.00	.00	1.85
AV. PAN FACTOR	.00	1.07	.92	.88	.82	.39	.12	.12	.12	.53	.80	1.38	

SQUASH	BEG 7/20		END 11/16										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.23	.45	.00	.00	.00	.00	.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.40	.43	.66	.68	.00	.00	

KAHLOTUS ## 46.58 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	28.8	37.8	44.0	50.0	58.2	65.1	73.2	72.9	61.6	51.2	37.6	29.5	
TOTAL PRECIPITATION (IN)	1.35	.90	.86	.74	.86	.75	.27	.43	.47	.81	1.32	1.55	10.31
EFFECTIVE PRECIP (IN)	.00	.19	.57	.54	.70	.68	.26	.42	.38	.54	.23	.00	4.52

ALFALFA	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.41	7.20	10.03	8.43	5.17	1.67	.00	.00	37.91
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.07	8.03	11.11	9.36	5.75	1.93	.00	.00	42.26
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.74	7.62	10.57	8.90	5.46	1.80	.00	.00	40.08
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 4/26		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	5.07	8.86	13.28	11.23	6.63	1.67	.00	.00	46.87
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 3/29		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.48	4.73	8.03	12.19	10.29	6.05	1.41	.00	.00	44.20
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 4/15		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.60	5.07	8.86	13.28	11.23	6.63	1.67	.00	.00	47.33
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.98	4.73	8.03	12.19	10.29	6.05	1.41	.00	.00	43.69
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 4/18		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.47	4.73	8.03	12.19	10.29	6.05	1.41	.00	.00	43.18
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 4/26		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	3.37	6.37	10.57	8.90	5.17	1.02	.00	.00	35.50
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

KAHLOTUS**

APRICOT W/O COVER	BEG 3/29	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.26	3.03	5.54	9.49	7.96	3.71	.89	.00	.00	31.88
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/15	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.49	3.37	6.37	10.57	8.90	5.17	1.02	.00	.00	35.89
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.81	3.03	5.54	9.49	7.96	3.71	.89	.00	.00	31.43
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/18	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.39	3.03	5.54	9.49	7.96	3.71	.89	.00	.00	31.01
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.78	5.13	8.94	7.96	4.58	1.02	.00	.00	28.42
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.45	6.37	10.03	13.55	.00	.00	.00	.00	32.41
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.45	4.30	11.65	10.76	6.63	2.06	.00	.00	37.86
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.81	6.43	9.28	12.74	10.29	4.58	.50	.00	.00	44.62
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.81	2.02	3.47	2.99	3.31	1.95	.24	.00	.00	14.77
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.50	11.46	9.79	.62	.00	.00	.00	24.37
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.87	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.12	8.34	8.86	.51	00	00	.00	19.83
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	80	.77	.00	00	.00	

CARROTS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.06	5.09	8.41	5.00	.00	00	.00	.00	.00	19.56
AV. PAN FACTOR	.00	.00	.00	.38	.68	.88	.74	00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.70	3.42	10.35	10.29	5.39	.21	.00	.00	30.36
AV. PAN FACTOR	.00	.00	.00	.00	.33	.40	.78	.92	.74	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.70	4.26	11.85	5.82	.00	.00	.00	.00	22.63
AV. PAN FACTOR	00	.00	.00	.00	.33	.48	.89	.90	00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	4.88	6.70	.00	.00	.00	.00	.00	.00	12.63
AV. PAN FACTOR	.00	.00	.00	.38	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.05	6.63	8.39	5.12	.55	.00	.00	22.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.51	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.15	5.69	8.03	11.08	8.05	.57	.00	.00	.00	34.58
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.04	4.11	6.54	.00	.00	.00	.00	.00	.00	11.69
AV. PAN FACTOR	.00	.00	.00	.37	.57	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.18	6.52	9.20	2.30	.00	.00	.00	.00	.00	19.20
AV. PAN FACTOR	.00	.00	.00	.41	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.70	3.64	11.36	10.28	4.47	.00	.00	.00	30.43
AV. PAN FACTOR	.00	.00	.00	.00	.33	.42	.86	.92	.74	.00	.00	.00	

KAHLOTUS**

RADISH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.78	5.00	.00	.00	.00	.00	.00	.00	.00	6.78
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	4.93	8.86	10.70	1.03	.00	.00	.00	.00	26.57
AV. PAN FACTOR	.00	.00	.00	.38	.66	.92	.81	.31	.00	.00	.00	.00	

SORGHUM — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.12	8.45	9.83	5.53	.39	.00	.00	26.32
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.88	.81	.54	.00	.00	

SOYBEANS — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.70	3.96	10.98	9.83	5.22	.14	.00	.00	30.83
AV. PAN FACTOR	.00	.00	.00	.00	.33	.45	.83	.88	.77	.43	.00	.00	

SPINACH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.06	5.25	1.44	.00	.00	.00	.00	.00	.00	7.75
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.32	2.92	7.10	8.86	7.21	.00	.00	.00	.00	.00	26.42
AV. PAN FACTOR	.00	.00	.45	.62	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.04	3.44	7.94	12.19	10.23	5.79	.23	.00	.00	40.87
AV. PAN FACTOR	.00	.00	.00	.37	.49	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.04	4.27	8.76	11.63	2.45	.00	.00	.00	.00	28.17
AV. PAN FACTOR	.00	.00	.00	.37	.59	.91	.88	.47	.00	.00	.00	.00	

TOMATO — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.70	3.06	9.14	9.83	5.31	.23	.00	.00	28.26
AV. PAN FACTOR	.00	.00	.00	.00	.33	.36	.69	.88	.78	.43	.00	.00	

WINTER WHEAT — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.66	4.32	7.11	8.13	3.38	.97	.41	.65	.00	.00	25.62
AV. PAN FACTOR	.00	.00	.64	.87	.92	.85	.39	.12	.12	.45	.80	.00	

SQUASH — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.05	6.63	8.38	1.87	.00	.00	.00	18.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.65	.00	.00	.00	

(WA210-VI-WAIG, OCTOBER 1985)

KENNEWICK 46.22 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	33.1	40.0	46.0	53.5	61.7	68.9	75.0	73.0	64.6	53.3	41.8	36.0	
TOTAL PRECIPITATION (IN)	1.17	.66	.54	.46	.59	.44	.19	.40	.37	.56	.99	1.18	7.55
EFFECTIVE PRECIP (IN)	.00	.26	.36	.35	.51	.41	.19	.38	.30	.37	.18	.00	3.31

ALFALFA BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.82	6.13	7.55	9.62	7.71	4.94	1.75	.00	.00	38.51
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.91	6.83	8.38	10.65	8.56	5.49	1.99	.00	.00	42.81
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.86	6.48	7.96	10.13	8.13	5.21	1.87	.00	.00	40.66
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/20 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.51	5.43	9.22	12.71	10.26	6.31	1.75	.00	.00	46.20
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.15	1.80	5.08	8.38	11.68	9.41	5.76	1.51	.00	.00	43.79
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/ 9 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.13	5.43	9.22	12.71	10.26	6.31	1.75	.00	.00	46.82
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 3/31 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.64	5.08	8.38	11.68	9.41	5.76	1.51	.00	.00	43.47
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/12 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.96	5.08	8.38	11.68	9.41	5.76	1.51	.00	.00	42.79
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 4/20 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.44	3.69	6.71	10.13	8.13	4.94	1.16	.00	.00	35.19
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

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APRICOT W/O COVER	BEG 3/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.12	1.56	3.34	5.87	9.10	7.28	3.56	1.04	.00	.00	31.88
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/ 9	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.97	3.69	6.71	10.13	8.13	4.94	1.16	.00	.00	35.73
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 3/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.41	3.34	5.87	9.10	7.28	3.56	1.04	.00	.00	31.60
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/12	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.82	3.34	5.87	9.10	7.28	3.56	1.04	.00	.00	31.02
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.57	5.45	8.58	7.28	4.39	1.16	.00	.00	28.43
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.39	2.99	6.71	9.62	12.39	.00	.00	.00	.00	32.09
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.39	2.99	4.61	11.16	9.84	6.31	2.10	.00	.00	37.40
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.56	6.83	9.64	12.20	9.41	4.39	.69	.00	.00	44.72
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.56	2.29	3.78	2.91	3.02	1.91	.45	.00	.00	15.92
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.59	11.54	8.25	.24	.00	.00	.00	23.62
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.91	.81	.31	.00	.00	.00	

GREEN BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.93	8.63	7.78	.00	.00	.00	.00	19.34
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.68	.79	.00	.00	.00	.00	

CARROTS	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.44	6.36	8.55	2.54	.00	.00	.00	.00	.00	19.90
AV. PAN FACTOR	.00	.00	.44	.47	.79	.86	.69	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	4.52	10.89	9.41	4.25	.00	.00	.00	30.48
AV. PAN FACTOR	.00	.00	.00	.00	.33	.47	.86	.92	.69	.00	.00	.00	

SWEET CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	5.93	11.68	2.89	.00	.00	.00	.00	21.90
AV. PAN FACTOR	.00	.00	.00	.00	.33	.61	.92	.88	.00	.00	.00	.00	

CRUCIFER	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.43	6.09	5.08	.00	.00	.00	.00	.00	.00	13.60
AV. PAN FACTOR	.00	.00	.44	.46	.75	.81	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.74	7.04	7.71	4.83	.46	.00	.00	22.77
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.56	.76	.74	.64	.00	.00	

DRY ONION	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.65	6.61	8.38	10.50	6.46	.00	.00	.00	.00	34.61
AV. PAN FACTOR	.00	.00	.44	.50	.81	.84	.83	.71	.00	.00	.00	.00	

GREEN ONION	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.33	5.43	5.03	.00	.00	.00	.00	.00	.00	12.79
AV. PAN FACTOR	.00	.00	.44	.45	.68	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.76	7.59	9.09	.00	.00	.00	.00	.00	.00	19.44
AV. PAN FACTOR	.00	.00	.44	.52	.93	.94	.00	.00	.00	.00	.00	.00	

POTATO	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	5.02	11.53	9.19	2.82	.00	.00	.00	29.97
AV. PAN FACTOR	.00	.00	.00	.00	.33	.52	.91	.90	.70	.00	.00	.00	

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APRICOT W/O COVER	BEG 3/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.12	1.56	3.34	5.87	9.10	7.28	3.56	1.04	.00	.00	31.88
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/ 9	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.97	3.69	6.71	10.13	8.13	4.94	1.16	.00	.00	35.73
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 3/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.41	3.34	5.87	9.10	7.28	3.56	1.04	.00	.00	31.60
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/12	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.82	3.34	5.87	9.10	7.28	3.56	1.04	.00	.00	31.02
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.57	5.45	8.58	7.28	4.39	1.16	.00	.00	28.43
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.39	2.99	6.71	9.62	12.39	.00	.00	.00	.00	32.09
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.39	2.99	4.61	11.16	9.84	6.31	2.10	.00	.00	37.40
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.56	6.83	9.64	12.20	9.41	4.39	.69	.00	.00	44.72
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.56	2.29	3.78	2.91	3.02	1.91	.45	.00	.00	15.92
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.59	11.54	8.25	.24	.00	.00	.00	23.62
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.91	.81	.31	.00	.00	.00	

GREEN BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.93	8.63	7.78	.00	.00	.00	.00	19.34
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.68	.79	.00	.00	.00	.00	

CARROTS	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.44	6.36	8.55	2.54	.00	.00	.00	.00	.00	19.90
AV. PAN FACTOR	.00	.00	.44	.47	.79	.86	.69	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	4.52	10.89	9.41	4.25	.00	.00	.00	30.48
AV. PAN FACTOR	.00	.00	.00	.00	.33	.47	.86	.92	.69	.00	.00	.00	

SWEET CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	5.93	11.68	2.89	.00	.00	.00	.00	21.90
AV. PAN FACTOR	.00	.00	.00	.00	.33	.61	.92	.88	.00	.00	.00	.00	

CRUCIFER	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.43	6.09	5.08	.00	.00	.00	.00	.00	.00	13.60
AV. PAN FACTOR	.00	.00	.44	.46	.75	.81	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.74	7.04	7.71	4.83	.46	.00	.00	22.77
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.56	.76	.74	.64	.00	.00	

DRY ONION	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.65	6.61	8.38	10.50	6.46	.00	.00	.00	.00	34.61
AV. PAN FACTOR	.00	.00	.44	.50	.81	.84	.83	.71	.00	.00	.00	.00	

GREEN ONION	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.33	5.43	5.03	.00	.00	.00	.00	.00	.00	12.79
AV. PAN FACTOR	.00	.00	.44	.45	.68	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.76	7.59	9.09	.00	.00	.00	.00	.00	.00	19.44
AV. PAN FACTOR	.00	.00	.44	.52	.93	.94	.00	.00	.00	.00	.00	.00	

POTATO	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	5.02	11.53	9.19	2.82	.00	.00	.00	29.97
AV. PAN FACTOR	.00	.00	.00	.00	.33	.52	.91	.90	.70	.00	.00	.00	

RADISH BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	3.24	.83	.00	.00	.00	.00	.00	.00	.00	4.08
AV. PAN FACTOR	.00	.00	.44	.60	.66	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.43	6.33	9.22	8.62	.17	.00	.00	.00	.00	26.78
AV. PAN FACTOR	.00	.00	.44	.47	.78	.92	.68	.21	.00	.00	.00	.00	

SORGHUM BEG 5/31 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.93	8.87	8.98	5.02	.33	.00	.00	26.14
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.70	.88	.77	.51	.00	.00	

SOYBEANS BEG 5/11 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	5.35	11.05	8.98	4.01	.00	.00	.00	30.79
AV. PAN FACTOR	.00	.00	.00	.00	.33	.55	.87	.88	.66	.00	.00	.00	

SPINACH BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.48	5.83	.00	.00	.00	.00	.00	.00	.00	8.30
AV. PAN FACTOR	.00	.00	.44	.47	.76	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 3/ 4 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.80	4.06	7.53	9.01	4.18	.00	.00	.00	.00	.00	25.57
AV. PAN FACTOR	.00	.00	.44	.74	.92	.90	.45	.00	.00	.00	.00	.00	

SUGAR BEET BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.30	4.80	8.86	11.68	9.26	4.85	.00	.00	.00	41.74
AV. PAN FACTOR	.00	.00	.44	.44	.61	.89	.92	.91	.84	.00	.00	.00	

SUNFLOWER BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.33	5.80	9.22	10.14	.95	.00	.00	.00	.00	28.44
AV. PAN FACTOR	.00	.00	.44	.45	.72	.92	.80	.38	.00	.00	.00	.00	

TOMATO BEG 5/11 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	3.91	9.90	8.98	4.32	.08	.00	.00	28.60
AV. PAN FACTOR	.00	.00	.00	.00	.33	.41	.78	.88	.67	.36	.00	.00	

WINTER WHEAT BEG 3/ 4 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	1.43	5.06	7.53	7.39	1.55	.88	.46	.94	.00	.00	25.23
AV. PAN FACTOR	.00	.00	.67	.90	.92	.74	.30	.12	.12	.44	.70	.00	

SQUASH BEG 5/31 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.74	7.04	7.58	1.29	.00	.00	.00	18.64
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.56	.75	.68	.00	.00	.00	

KENT 47.38 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.9	42.7	44.7	49.6	55.8	60.9	65.0	64.3	59.6	51.7	43.8	40.5	
TOTAL PRECIPITATION (IN)	6.18	4.23	3.77	2.64	1.75	1.52	.81	1.34	2.05	3.47	5.68	6.48	39.92
EFFECTIVE PRECIP (IN)	.12	.74	1.57	1.76	1.27	1.12	.65	.99	1.42	1.56	.41	.07	11.68

ALFALFA BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.45	3.35	4.83	3.48	1.58	.00	.00	.00	14.70
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.91	4.14	5.80	4.27	2.11	.03	.00	.00	18.26
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.76	3.88	5.48	4.01	1.94	.00	.00	.00	17.06
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.49	4.67	7.09	5.32	2.64	.00	.00	.00	21.22
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.70	3.09	5.15	3.74	1.58	.00	.00	.00	14.27
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.88	4.51	3.22	1.23	.00	.00	.00	10.83
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.68	5.20	7.09	5.06	1.58	.00	.00	.00	22.60
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.62	1.51	1.28	1.11	.00	.00	.00	.00	4.52
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.43	3.49	1.16	.00	.00	.00	7.09
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.38	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.37	3.38	4.15	.84	.00	.00	.00	.00	.00	8.74
AV. PAN FACTOR	.00	.00	.52	.55	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.72	3.96	4.71	2.40	.00	.00	.00	11.79
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.57	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.78	5.14	4.74	.10	.00	.00	.00	10.76
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	3.19	1.87	.00	.00	.00	.00	.00	.00	5.41
AV. PAN FACTOR	.00	.00	.52	.55	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.27	2.82	1.76	.00	.00	.00	6.85
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	3.16	3.88	5.36	2.37	.00	.00	.00	.00	15.22
AV. PAN FACTOR	.00	.00	.52	.57	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.29	2.84	1.86	.00	.00	.00	.00	.00	.00	4.98
AV. PAN FACTOR	.00	.00	.52	.53	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.59	4.07	3.80	.00	.00	.00	.00	.00	.00	8.46
AV. PAN FACTOR	.00	.00	.52	.61	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.72	4.53	4.80	2.21	.00	.00	.00	12.26
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.64	.88	.82	.62	.00	.00	

RADISH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.60	.12	.00	.00	.00	.00	.00	.00	.00	.72
AV. PAN FACTOR	.00	.00	.52	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.38	2.28	.00	.00	.00	.00	.00	.00	.00	2.66
AV. PAN FACTOR	.00	.00	.52	.55	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.62	3.91	3.12	.20	.00	.00	.00	.00	.00	8.85
AV. PAN FACTOR	.00	.64	.70	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.72	3.37	4.32	2.28	.00	.00	.00	10.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	1.64	3.72	1.02	.16	.00	.00	.00	.00	.00	6.78
AV. PAN FACTOR	.00	.98	.91	.88	.85	.42	.12	.12	.12	.52	.79	1.40	

SQUASH BEG 6/29 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.27	2.82	1.72	.00	.00	.00	6.81
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.71	.60	.00	.00	

LACROSSE 46.80 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	29.9	37.0	41.3	48.2	55.6	63.0	70.2	68.4	60.8	50.0	38.5	33.1	
TOTAL PRECIPITATION (IN)	1.92	1.26	1.12	.90	.97	.90	.39	.60	.60	1.02	1.64	2.17	13.49
EFFECTIVE PRECIP (IN)	.00	.26	.70	.63	.73	.73	.38	.54	.46	.65	.21	.00	5.30

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.98	5.81	8.53	6.84	4.33	.30	.00	.00	27.79
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.24	6.50	9.47	7.61	4.84	.37	.00	.00	31.02
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.11	6.15	9.00	7.23	4.59	.33	.00	.00	29.40
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.84	7.18	11.34	9.17	5.59	.30	.00	.00	35.43
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.32	3.54	6.50	10.40	8.39	5.09	.23	.00	.00	34.48
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.99	7.18	11.34	9.17	5.59	.30	.00	.00	36.57
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	3.54	6.50	10.40	8.39	5.09	.23	.00	.00	34.25
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.44	6.50	10.40	8.39	5.09	.23	.00	.00	33.06
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.15	5.12	9.00	7.23	4.33	.14	.00	.00	26.96
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

LACROSSE

APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.24	2.21	4.43	8.06	6.45	3.07	.10	.00	.00	24.56
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.87	5.12	9.00	7.23	4.33	.14	.00	.00	27.68
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	2.21	4.43	8.06	6.45	3.07	.10	.00	.00	24.40
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.46	4.43	8.06	6.45	3.07	.10	.00	.00	23.57
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.66	7.59	6.45	3.83	.14	.00	.00	21.66
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.82	5.12	8.53	11.11	.00	.00	.00	.00	25.57
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.82	3.40	9.94	8.78	5.59	.40	.00	.00	28.93
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	4.87	7.53	10.87	8.39	3.83	.00	.00	.00	35.57
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.41	2.71	2.43	2.57	1.56	.00	.00	.00	10.75
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.51	6.22	8.77	3.03	.00	.00	.00	18.54
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.51	4.54	6.93	2.92	.00	.00	.00	14.90
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.32	6.32	9.35	.75	.00	.00	.00	.00	18.87
AV. PAN FACTOR	.00	.00	.00	.40	.46	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.81	6.67	8.31	5.11	.16	.00	.00	22.06
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.98	8.60	8.20	.00	.00	.00	.00	18.77
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.29	6.02	4.35	.00	.00	.00	.00	.00	12.78
AV. PAN FACTOR	.00	.00	.00	.40	.45	.78	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.51	3.92	5.99	4.33	.29	.00	.00	15.05
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.69	6.43	9.47	7.39	2.91	.00	.00	.00	29.01
AV. PAN FACTOR	.00	.00	.00	.40	.51	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.08	5.38	4.35	.00	.00	.00	.00	.00	11.93
AV. PAN FACTOR	.00	.00	.00	.40	.42	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.90	7.45	8.54	.00	.00	.00	.00	.00	19.00
AV. PAN FACTOR	.00	.00	.00	.40	.54	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.82	7.68	8.39	4.89	.21	.00	.00	23.00
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

RADISH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	3.40	.00	.00	.00	.00	.00	.00	.00	3.52
AV. PAN FACTOR	.00	.00	.00	.40	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.29	6.33	10.40	4.82	.00	.00	.00	.00	23.97
AV. PAN FACTOR	.00	.00	.00	.40	.45	.82	.92	.59	.00	.00	.00	.00	

SORGHUM — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.51	4.54	7.37	5.09	.22	.00	.00	17.73
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.81	.88	.66	.00	.00	

SOYBEANS — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.94	7.76	8.00	5.00	.11	.00	.00	22.81
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.69	.88	.87	.53	.00	.00	

SPINACH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.42	4.80	.00	.00	.00	.00	.00	.00	7.34
AV. PAN FACTOR	.00	.00	.00	.40	.47	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.84	4.22	7.18	10.02	2.39	.00	.00	.00	.00	24.65
AV. PAN FACTOR	.00	.00	.00	.40	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.12	1.96	4.69	10.19	8.39	5.15	.35	.00	.00	30.86
AV. PAN FACTOR	.00	.00	.00	.40	.40	.63	.90	.92	.89	.82	.00	.00	

SUNFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.09	5.85	10.40	6.45	.14	.00	.00	.00	25.06
AV. PAN FACTOR	.00	.00	.00	.40	.42	.76	.92	.72	.32	.00	.00	.00	

TOMATO — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.79	5.66	7.74	4.99	.09	.00	.00	20.28
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.73	5.31	7.18	8.04	.75	.16	.22	.00	.00	23.39
AV. PAN FACTOR	.00	.00	.00	.62	.91	.92	.72	.28	.12	.48	.93	.00	

SQUASH — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.51	3.92	5.99	3.94	.00	.00	.00	14.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

LAURIER 49.00 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	22.9	30.0	36.7	46.4	55.3	62.0	67.9	66.7	58.1	45.6	33.2	26.3	
TOTAL PRECIPITATION (IN)	2.20	1.46	1.35	1.38	1.89	1.86	1.15	1.48	.95	1.33	1.84	2.38	19.27
EFFECTIVE PRECIP (IN)	.00	.01	.82	.97	1.40	1.47	1.11	1.25	.69	.82	.00	.00	8.54

ALFALFA	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.57	5.07	7 63	5.99	3.81	.00	.00	.00	24.15
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.83	5.76	8.55	6.76	4.28	.13	.00	.00	27.31
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.70	5.41	8.09	6.38	4.04	.11	.00	.00	25.73
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	6.45	10.39	8.28	4.99	.08	.00	.00	31.58
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 4/16		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	2.93	5.76	9.47	7.52	4.52	.03	.00	.00	30.29
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 5/ 4		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.27	6.45	10.39	8.28	4.99	.08	.00	.00	32.45
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	2.93	5.76	9.47	7.52	4.52	.03	.00	.00	30.24
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.81	5.76	9.47	7.52	4.52	.03	.00	.00	29.09
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.70	4.38	8.09	6.38	3.81	.00	.00	.00	23.35
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/16		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	00	.01	1.57	3.69	7.17	5.61	2.62	.00	00	.00	20 68
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.13	4.38	8.09	6.38	3.81	.00	.00	.00	23.79
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.57	3.69	7.17	5.61	2.62	.00	.00	.00	20.67
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

EAR & PLUM W/O COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	3.69	7.17	5.61	2.62	.00	.00	.00	19.90
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

RAPES	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.76	6.71	5.61	3.33	.00	.00	.00	18.42
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

PS	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.39	4.38	7.63	10.19	.00	.00	.00	.00	22.59
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

NT	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.39	2.66	9.01	7.90	4.99	.16	.00	.00	25.11
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

PBERRY	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.28	6.79	9.93	7.52	3.33	.00	.00	.00	31.85
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

WBERRY	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.76	1.97	1.65	1.80	1.20	.00	.00	.00	7.39
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

BEANS	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	5.36	7.90	2.52	.00	.00	.00	16.04
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	3.72	6.08	2.48	.00	.00	.00	12.54
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.72	5.59	8.44	.63	.00	.00	.00	.00	16.43
AV. PAN FACTOR	.00	.00	.00	.40	.46	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.92	5.81	7.44	4.54	.00	.00	.00	18.70
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.08	7.70	7.16	.00	.00	.00	.00	15.94
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.69	5.29	3.89	.00	.00	.00	.00	.00	10.93
AV. PAN FACTOR	.00	.00	.00	.40	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.26	3.11	5.16	3.81	.07	.00	.00	12.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	2.09	5.70	8.55	6.53	2.44	.00	.00	.00	25.36
AV. PAN FACTOR	.00	.00	.00	.40	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.48	4.66	3.89	.00	.00	.00	.00	.00	10.08
AV. PAN FACTOR	.00	.00	.00	.40	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	2.30	6.71	7.75	.00	.00	.00	.00	.00	16.82
AV. PAN FACTOR	.00	.00	.00	.40	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.92	6.80	7.52	4.33	.01	.00	.00	19.58
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

RADISH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	2.79	.00	.00	.00	.00	.00	.00	.00	2.84
AV. PAN FACTOR	.00	.00	.00	.40	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.70	5.60	9.47	3.89	.00	.00	.00	.00	20.71
AV. PAN FACTOR	.00	.00	.00	.40	.46	.82	.92	.59	.00	.00	.00	.00	

SORGHUM — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.26	3.72	6.52	4.52	.01	.00	.00	15.02
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.81	.88	.66	.00	.00	

SOYBEANS — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.04	6.88	7.14	4.43	.00	.00	.00	19.49
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.69	.88	.87	.53	.00	.00	

SPINACH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.82	4.00	.00	.00	.00	.00	.00	.00	5.88
AV. PAN FACTOR	.00	.00	.00	.40	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	3.63	6.45	9.09	1.75	.00	.00	.00	.00	21.26
AV. PAN FACTOR	.00	.00	.00	.41	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.05	1.37	3.98	9.26	7.52	4.57	.12	.00	.00	26.87
AV. PAN FACTOR	.00	.00	.00	.40	.41	.63	.90	.92	.89	.82	.00	.00	

SUNFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.50	5.13	9.47	5.61	.09	.00	.00	.00	21.85
AV. PAN FACTOR	.00	.00	.00	.40	.43	.77	.92	.72	.32	.00	.00	.00	

TOMATO — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.90	4.82	6.88	4.42	.00	.00	.00	17.02
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.21	4.72	6.45	7.15	.42	.00	.00	.00	.00	19.95
AV. PAN FACTOR	.00	.00	.00	.65	.91	.92	.72	.28	.12	.51	.00	.00	

SQUASH — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	3.11	5.16	3.31	.00	.00	.00	11.84
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

LEAVENWORTH 4 47.57 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	25.3	31.9	40.5	46.8	55.0	61.2	68.1	67.4	58.3	47.2	34.3	25.0	
TOTAL PRECIPITATION (IN)	5.15	2.95	2.95	1.14	.73	.65	.31	69	1.99	1.80	4.08	5.24	27.68
EFFECTIVE PRECIP (IN)	.00	.00	.92	.73	.51	.48	.27	.54	1.41	.99	.00	.00	5.86

ALFALFA	BEG 6/ 3		END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.37	6.42	4.77	2.56	.00	.00	.00	17.12
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 6/ 3		END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.79	7.13	5.33	2.98	.00	.00	.00	19.22
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 6/ 3		END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.58	6.78	5.05	2.77	.00	.00	.00	18.17
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 6/ 1		END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	4.52	8.54	6.44	3.60	.00	.00	.00	23.11
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 5/ 4		END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.03	4.53	7.83	5.89	3.19	.00	.00	.00	23.47
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 5/22		END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.68	5.01	8.54	6.44	3.60	.00	.00	.00	24.28
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 5/12		END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.41	4.53	7.83	5.89	3.19	.00	.00	.00	22.85
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 5/24		END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.47	4.53	7.83	5.89	3.19	.00	.00	.00	21.91
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 6/ 1		END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.18	6.78	5.05	2.56	.00	.00	.00	17.57
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

LEAVENWORTH*

APRICOT W/O COVER	BEG 5/ 4	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.21	3.10	6.07	4.49	1.52	.00	.00	.00	16.38
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/22	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	00	.00	.00	.00	.42	3.58	6.76	5.05	2.56	.00	.00	.00	18.38
AV. PAN FACTOR	32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 5/12	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.84	3.10	6.07	4.49	1.52	.00	.00	.00	16.01
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.28	3.10	6.07	4.49	1.52	.00	.00	.00	15.45
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.45	5.72	4.49	2.14	.00	.00	.00	12.80
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 6/ 3	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.96	6.42	7.84	.00	.00	.00	.00	17.22
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 6/ 3	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.92	7.48	6.17	3.60	.00	.00	.00	19.17
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.65	5.25	8.19	5.89	2.14	.00	.00	.00	23.11
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.41	1.90	1.84	1.70	.26	.00	.00	.00	6.12
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.09	4.10	3.60	.00	.00	.00	8.79
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.66	.96	.65	.00	.00	

GREEN BEANS	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.09	2.78	2.72	.00	.00	.00	6.58
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.47	.79	.80	.00	.00	

CARROTS	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	2.88	7.42	3.68	.00	.00	.00	.00	14.57
AV. PAN FACTOR	.00	.00	.00	.00	.39	.56	.87	.78	.00	.00	.00	.00	

FIELD CORN	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.26	3.20	4.58	3.40	.00	.00	.00	11.43
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.39	.73	.92	.89	.00	.00	

SWEET CORN	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	3.63	5.48	2.09	.00	.00	.00	11.46
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.44	.86	.90	.00	.00	.00	

CRUCIFER	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	2.79	6.95	.58	.00	.00	.00	.00	10.91
AV. PAN FACTOR	.00	.00	.00	.00	.39	.55	.82	.74	.00	.00	.00	.00	

CUCUMBER	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.09	2.26	2.29	.00	.00	.00	5.63
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.40	.71	.75	.00	.00	

DRY ONION	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.59	3.42	7.13	5.33	2.60	.00	.00	.00	19.07
AV. PAN FACTOR	.00	.00	.00	.00	.39	.65	.84	.84	.77	.66	.00	.00	

GREEN ONION	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	2.41	6.58	.57	.00	.00	.00	.00	10.15
AV. PAN FACTOR	.00	.00	.00	.00	.39	.48	.78	.73	.00	.00	.00	.00	

PEAS	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	3.84	8.18	2.58	.00	.00	.00	.00	15.19
AV. PAN FACTOR	.00	.00	.00	.00	.39	.72	.96	.92	.00	.00	.00	.00	

POTATO	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.26	3.28	5.14	3.40	.00	.00	.00	12.07
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.40	.81	.92	.83	.00	.00	

RADISH BEG 5/15 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.81	3.52	.00	.00	.00	.00	.00	.00	4.33
AV. PAN FACTOR	.00	.00	.00	.00	.49	.67	.00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 5/15 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	2.80	7.62	5.72	.16	.00	.00	.00	16.89
AV. PAN FACTOR	.00	.00	.00	.00	.39	.55	.90	.90	.43	.00	.00	.00	

SORGHUM BEG 7/17 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.09	2.78	3.02	.00	.00	.00	6.89
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.40	.85	.85	.00	.00	

SOYBEANS BEG 6/24 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.26	3.50	5.01	3.19	.00	.00	.00	11.95
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.43	.79	.88	.84	.00	.00	

SPINACH BEG 5/15 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	3.08	3.20	.00	.00	.00	.00	.00	6.87
AV. PAN FACTOR	.00	.00	.00	.00	.39	.60	.79	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 4/22 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	2.08	4.76	7.83	4.74	.00	.00	.00	.00	19.43
AV. PAN FACTOR	.00	.00	.00	.48	.53	.88	.92	.76	.29	.00	.00	.00	

SUGAR BEET BEG 5/15 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.59	2.13	6.34	5.89	3.39	.00	.00	.00	18.33
AV. PAN FACTOR	.00	.00	.00	.00	.39	.44	.75	.92	.92	.85	.00	.00	

SUNFLOWER BEG 5/15 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	2.47	7.35	5.87	.77	.00	.00	.00	17.05
AV. PAN FACTOR	.00	.00	.00	.00	.39	.49	.87	.92	.57	.00	.00	.00	

TOMATO BEG 6/24 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.26	3.03	3.95	3.18	.00	.00	.00	10.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.37	.64	.88	.84	.00	.00	

WINTER WHEAT BEG 4/22 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	3.44	5.01	7.78	2.78	.00	.00	.00	.00	19.12
AV. PAN FACTOR	.00	.00	.00	.63	.80	.92	.91	.50	.12	.56	.00	.00	

SQUASH BEG 7/17 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.09	2.26	2.29	.00	.00	.00	5.63
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.40	.71	.75	.00	.00	

LIND 47.00 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	28.4	36.0	41.4	48.4	56.8	64.2	71.3	69.5	61.9	50.4	37.8	31.6	
TOTAL PRECIPITATION (IN)	1.11	.83	.71	.68	.81	.65	.27	.42	.49	.75	1.18	1.31	9.21
EFFECTIVE PRECIP (IN)	.00	.15	.46	.49	.66	.59	.26	.41	.40	.50	.23	.00	4.15

ALFALFA BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.28	7.19	9.74	7.94	5.19	1.65	.00	.00	36.99
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.92	8.00	10.79	8.82	5.78	1.91	.00	.00	41.22
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.60	7.59	10.26	8.38	5.49	1.78	.00	.00	39.11
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	4.95	8.82	12.90	10.58	6.66	1.65	.00	.00	45.69
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/29 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.44	4.62	8.00	11.84	9.70	6.08	1.40	.00	.00	43.09
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/15 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.58	4.95	8.82	12.90	10.58	6.66	1.65	.00	.00	46.15
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.96	4.62	8.00	11.84	9.70	6.08	1.40	.00	.00	42.60
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/18 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.46	4.62	8.00	11.84	9.70	6.08	1.40	.00	.00	42.10
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	3.30	6.37	10.26	8.38	5.19	1.02	.00	.00	34.63
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 3/29	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.22	2.97	5.55	9.21	7.50	3.72	.90	.00	.00	31.08
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/15	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.48	3.30	6.37	10.26	8.38	5.19	1.02	.00	.00	35.01
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	2.97	5.55	9.21	7.50	3.72	.90	.00	.00	30.64
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/18	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.38	2.97	5.55	9.21	7.50	3.72	.90	.00	.00	30.23
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	5.14	8.68	7.50	4.60	1.02	.00	.00	27.72
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.41	6.37	9.74	12.77	.00	.00	.00	.00	31.29
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.41	4.32	11.32	10.14	6.66	2.03	.00	.00	36.88
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	6.27	9.23	12.37	9.70	4.60	.52	.00	.00	43.48
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	1.98	3.50	2.89	3.11	1.96	.26	.00	.00	14.49
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.55	11.13	9.22	.62	.00	.00	.00	23.52
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.87	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.18	8.10	8.35	.51	.00	.00	.00	19.14
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	4.98	8.38	4.86	.00	.00	.00	.00	.00	19.27
AV. PAN FACTOR	.00	.00	.00	.38	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	3.48	10.06	9.70	5.42	.21	.00	.00	29.56
AV. PAN FACTOR	.00	.00	.00	.00	.34	.40	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	4.31	11.51	5.48	.00	.00	.00	.00	21.99
AV. PAN FACTOR	.00	.00	.00	.00	.34	.48	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	4.78	6.68	.00	.00	.00	.00	.00	.00	12.51
AV. PAN FACTOR	.00	.00	.00	.38	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.11	6.44	7.91	5.14	.55	.00	.00	22.15
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	5.56	8.00	10.76	7.58	.57	.00	.00	.00	33.63
AV. PAN FACTOR	.00	.00	.00	.41	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.04	4.04	6.53	.00	.00	.00	.00	.00	.00	11.61
AV. PAN FACTOR	.00	.00	.00	.38	.57	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.17	6.37	9.16	2.23	.00	.00	.00	.00	.00	18.92
AV. PAN FACTOR	.00	.00	.00	.41	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	3.69	11.03	9.68	4.49	.00	.00	.00	29.59
AV. PAN FACTOR	.00	.00	.00	.00	.34	.42	.86	.92	.74	.00	.00	.00	

RADISH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.73	4.88	.00	.00	.00	.00	.00	.00	.00	6.61
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	4.83	8.82	10.39	.97	.00	.00	.00	.00	26.06
AV. PAN FACTOR	.00	.00	.00	.38	.67	.92	.81	.31	.00	.00	.00	.00	

SORGHUM — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.18	8.21	9.26	5.56	.40	.00	.00	25.60
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.88	.81	.54	.00	.00	

SOYBEANS — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	4.01	10.67	9.26	5.25	.14	.00	.00	30.03
AV. PAN FACTOR	.00	.00	.00	.00	.34	.45	.83	.88	.77	.43	.00	.00	

SPINACH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	5.13	1.44	.00	.00	.00	.00	.00	.00	7.63
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.35	2.87	6.92	8.82	7.00	.00	.00	.00	.00	.00	25.96
AV. PAN FACTOR	.00	.00	.47	.63	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.04	3.39	7.92	11.84	9.64	5.82	.23	.00	.00	39.89
AV. PAN FACTOR	.00	.00	.00	.38	.49	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.04	4.20	8.73	11.30	2.31	.00	.00	.00	.00	27.57
AV. PAN FACTOR	.00	.00	.00	.38	.59	.91	.88	.47	.00	.00	.00	.00	

TOMATO — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	3.12	8.89	9.26	5.33	.24	.00	.00	27.54
AV. PAN FACTOR	.00	.00	.00	.00	.34	.36	.70	.88	.78	.43	.00	.00	

WINTER WHEAT — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.66	4.18	6.93	8.10	3.28	.90	.39	.68	.00	.00	25.11
AV. PAN FACTOR	.00	.00	.66	.87	.92	.85	.39	.12	.12	.45	.80	.00	

SQUASH — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.11	6.44	7.89	1.87	.00	.00	.00	18.32
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.65	.00	.00	.00	

LONGVIEW 46.17 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.8	42.6	44.7	49.1	54.7	59.7	64.1	64.2	60.8	53.2	45.0	40.7	
TOTAL PRECIPITATION (IN)	6.96	4.41	4.48	3.30	2.36	1.99	.85	1.58	2.21	4.07	6.28	7.65	46.14
EFFECTIVE PRECIP (IN)	.10	.63	1.27	2.08	1.70	1.43	.67	1.15	1.56	1.62	.36	.01	12.58

ALFALFA BEG 5/ 3 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.92	2.63	4.41	2.80	1.68	.00	.00	.00	12.45
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/ 3 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.45	3.34	5.31	3.50	2.26	.03	.00	.00	15.88
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/ 3 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.27	3.10	5.01	3.27	2.06	.00	.00	.00	14.72
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 4/27 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.32	3.82	6.50	4.43	2.83	.00	.00	.00	18.90
AV. PAN FACTOR	.40	.40	.40	.40	.60	88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 4/27 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.51	2.39	4.71	3.03	1.68	.00	.00	.00	12.33
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 5/28 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.91	4.11	2.57	1.30	.00	.00	.00	9.90
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/19 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.53	4.30	6.50	4.20	1.68	.00	.00	.00	19.21
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/19 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.96	1.13	.71	.00	.00	.00	.00	2.79
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

LONGVIEW

GREEN BEANS	BEG 6/25	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.03	2.43	2.99	1.07	.00	.00	.00	6.52
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.41	.71	.74	.00	.00	.00	

CARROTS	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	2.46	2.34	.00	.00	.00	.00	.00	.00	4.90
AV. PAN FACTOR	.00	.00	.56	.63	.83	.75	.00	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/28	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.97	4.31	3.96	2.41	.00	.00	.00	11.64
AV. PAN FACTOR	.00	.00	.00	.00	.39	.40	.67	.88	.83	.56	.00	.00	

SWEET CORN	BEG 5/28	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.14	5.27	3.01	.00	.00	.00	.00	9.42
AV. PAN FACTOR	.00	.00	.00	.00	.39	.43	.79	.87	.00	.00	.00	.00	

CRUCIFER	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	2.26	.59	.00	.00	.00	.00	.00	.00	2.92
AV. PAN FACTOR	.00	.00	.56	.62	.79	.70	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/25	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.03	2.20	2.44	1.87	.00	.00	.00	6.54
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.38	.62	.72	.68	.57	.00	

DRY ONION	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.18	2.12	3.10	4.76	1.16	.00	.00	.00	.00	11.31
AV. PAN FACTOR	.00	.00	.56	.65	.76	.76	.73	.63	.00	.00	.00	.00	

GREEN ONION	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.01	.60	.00	.00	.00	.00	.00	.00	2.62
AV. PAN FACTOR	.00	.00	.56	.59	.74	.71	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.43	2.93	1.98	.00	.00	.00	.00	.00	.00	5.33
AV. PAN FACTOR	.00	.00	.56	.72	.92	.89	.00	.00	.00	.00	.00	.00	

POTATO	BEG 5/28	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.98	4.87	3.96	2.15	.00	.00	.00	11.97
AV. PAN FACTOR	.00	.00	.00	.00	.39	.40	.74	.88	.78	.59	.00	.00	

RADISH	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	.00	.00	.00	.00	.00	.00	.00	.00	.11
AV. PAN FACTOR	.00	.00	.57	63	.00	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	.88	.00	.00	.00	.00	.00	.00	.00	1.00
AV. PAN FACTOR	.00	.00	.56	.63	.75	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/12	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.97	2.73	2.18	.09	.00	.00	.00	.00	.00	5.97
AV. PAN FACTOR	.00	.67	.73	.88	.88	.60	.23	.00	.00	.00	.00	.00	

TOMATO	BEG 5/28	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.91	3.72	3.68	2.33	.00	.00	.00	10.65
AV. PAN FACTOR	.00	.00	.00	.00	.39	.39	.59	.83	.82	.50	.00	.00	

WINTER WHEAT	BEG 2/12	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.21	.98	2.49	.29	.05	.00	.00	.00	.00	.00	4.02
AV. PAN FACTOR	.00	1.04	.92	.88	.83	.40	.12	.12	.12	.52	.81	2.65	

SQUASH	BEG 6/25	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.03	2.20	2.44	1.77	.00	.00	.00	6.44
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.38	.62	.70	.58	.00	.00	

MC MILLIN 47.13 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	37.2	41.0	42.8	47.4	53.3	58.2	62.6	62.6	58.4	50.8	42.9	39.2	
TOTAL PRECIPITATION (IN)	6.00	4.28	3.76	3.04	2.18	1.98	.89	1.64	2.21	3.56	5.66	6.20	41.40
EFFECTIVE PRECIP (IN)	.05	.65	1.43	1.96	1.58	1.42	.70	1.20	1.53	1.51	.37	.02	12.43

ALFALFA BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.00	2.77	4.50	3.10	1.38	.00	.00	.00	12.74
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.43	3.51	5.41	3.86	1.90	.03	.00	.00	16.12
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.29	3.26	5.11	3.60	1.72	.00	.00	.00	14.98
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.93	4.00	6.64	4.87	2.41	.00	.00	.00	18.85
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APRICOT W/COVER BEG 3/30 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.50	3.51	5.72	4.36	1.90	.00	.00	.00	16.98
AV. PAN FACTOR	.40	.40	.40	.40	.56	.80	.84	.88	.80	.64	.40	.40	

CHERRY W/COVER BEG 4/21 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.72	4.00	6.64	4.87	2.41	.00	.00	.00	19.63
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

PEACH W/ COVER BEG 4/ 9 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.50	3.51	5.72	4.36	1.90	.00	.00	.00	16.98
AV. PAN FACTOR	.40	.40	.40	.40	.56	.80	.84	.88	.80	.64	.40	.40	

PEAR & PLUM W/COVER BEG 4/25 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.50	3.51	5.72	4.36	1.90	.00	.00	.00	16.98
AV. PAN FACTOR	.40	.40	.40	.40	.56	.80	.84	.88	.80	.64	.40	.40	

APPLE W/O COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.20	2.52	4.80	3.35	1.38	.00	.00	.00	12.25
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

APRICOT W/O COVER	BEG 3/30	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.84	2.03	4.19	2.84	1.04	.00	.00	.00	10.94
AV. PAN FACTOR	.36	.36	.36	.36	.44	.56	.64	.64	.60	.48	.36	.36	

CHERRY W/O COVER	BEG 4/21	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.84	2.52	4.80	3.35	1.38	.00	.00	.00	12.89
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

PEACH W/O COVER	BEG 4/ 9	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.84	2.03	4.19	2.84	1.04	.00	.00	.00	10.94
AV. PAN FACTOR	.36	.36	.36	.36	.44	.56	.64	.64	.60	.48	.36	.36	

PEAR & PLUM W/O COVER	BEG 4/25	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.84	2.03	4.19	2.84	1.04	.00	.00	.00	10.94
AV. PAN FACTOR	.36	.36	.36	.36	.44	.56	.64	64	.60	.48	.36	.36	

GRAPES	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.28	4.19	2.84	1.04	.00	.00	.00	9.35
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

HOPS	BEG 5/10	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.01	2.77	5.11	6.38	.00	.00	.00	.00	14.27
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/10	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.01	1.53	6.02	4.87	2.58	.18	.00	.00	15.20
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.04	4.49	6.64	4.61	1.38	.00	.00	.00	20.16
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.18	1.04	1.13	.82	.00	.00	.00	.00	3.17
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.78	4.43	1.71	.00	.00	.00	8.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.46	.89	.76	.29	.00	.00	

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	00	.00	2.27	3.12	.92	.00	.00	.00	6.30
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.39	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.06	2.78	3.51	.77	.00	.00	.00	.00	.00	7.12
AV. PAN FACTOR	.00	.00	.54	.56	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.23	3.71	4.28	2.17	.00	.00	.00	10.38
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.58	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.29	4.80	4.31	.08	.00	.00	.00	9.48
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	2.59	1.45	.00	.00	.00	.00	.00	.00	4.09
AV. PAN FACTOR	.00	.00	.54	.56	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.12	2.48	1.55	.00	.00	.00	6.15
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.56	3.26	5.00	1.99	.00	.00	.00	.00	12.94
AV. PAN FACTOR	.00	.00	.54	.58	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.28	1.44	.00	.00	.00	.00	.00	.00	3.72
AV. PAN FACTOR	.00	.00	.54	.54	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	3.41	3.08	.00	.00	.00	.00	.00	.00	6.74
AV. PAN FACTOR	.00	.00	.54	.62	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.23	4.24	4.36	1.99	.00	.00	.00	10.82
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.65	.88	.82	.62	.00	.00	

RADISH	BEG 3/27	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.24	.07	.00	.00	.00	.00	.00	.00	.00	.31
AV. PAN FACTOR	.00	.00	.54	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 3/27	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.06	2.83	4.00	3.74	.00	.00	.00	.00	.00	10.64
AV. PAN FACTOR	.00	.00	.54	.56	.80	.88	.61	.00	.00	.00	.00	.00	

SORGHUM	BEG 6/29	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.28	3.31	2.07	.00	.00	.00	7.66
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.39	.71	.84	.71	.45	.00	

SOYBEANS	BEG 6/ 3	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.28	4.31	4.11	2.05	.00	.00	.00	10.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.66	.84	.84	.57	.00	.00	

SPINACH	BEG 3/27	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.65	.00	.00	.00	.00	.00	.00	.00	1.73
AV. PAN FACTOR	.00	.00	.54	.57	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.18	3.26	2.55	.17	.00	.00	.00	.00	.00	7.15
AV. PAN FACTOR	.00	.67	.72	.87	.88	.64	.26	.00	.00	.00	.00	.00	

SUGAR BEET	BEG 3/27	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.14	3.91	6.02	4.24	.94	.00	.00	.00	17.26
AV. PAN FACTOR	.00	.00	.54	.54	.68	.86	.88	.86	.79	.00	.00	.00	

SUNFLOWER	BEG 3/27	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.62	4.00	4.92	.12	.00	.00	.00	.00	11.66
AV. PAN FACTOR	.00	.00	.54	.55	.76	.88	.74	.38	.00	.00	.00	.00	

TOMATO	BEG 6/ 3	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.23	3.15	3.90	2.06	.00	.00	.00	9.33
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT	BEG 2/14	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.25	1.20	3.07	.49	.03	.00	.00	.00	.00	.00	5.04
AV. PAN FACTOR	.00	1.04	.92	.88	.85	.42	.12	.12	.12	.53	.81	2.02	

SQUASH	BEG 6/29	END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.12	2.48	1.52	.00	.00	.00	6.11
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.71	.60	.00	.00	

MC NARY DAM*

MC NARY DAM * 45.95 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	32.0	39.0	46.0	52.4	60.0	66.7	73.8	73.9	64.8	53.8	42.4	35.1	
TOTAL PRECIPITATION (IN)	1.21	.86	.77	.69	.68	.53	.25	.61	.61	.71	1.03	1.33	9.30
EFFECTIVE PRECIP (IN)	.00	.19	.50	.50	.56	.48	.25	.58	.48	.47	.29	.00	4.30

ALFALFA	BEG 5/25		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.91	7.02	9.67	7.68	4.87	1.46	.00	.00	31.61
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 5/25		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.02	7.81	10.71	8.55	5.43	1.67	.00	.00	35.20
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 5/25		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.97	7.42	10.19	8.12	5.15	1.56	.00	.00	33.40
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 5/26		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.64	8.60	12.80	10.29	6.27	1.46	.00	.00	40.07
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 4/28		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	4.77	7.81	11.76	9.42	5.71	1.24	.00	.00	40.76
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 5/17		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.09	8.60	12.80	10.29	6.27	1.46	.00	.00	41.52
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 5/ 7		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.46	7.81	11.76	9.42	5.71	1.24	.00	.00	39.39
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 5/19		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.65	7.81	11.76	9.42	5.71	1.24	.00	.00	37.59
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 5/26		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.43	6.23	10.19	8.12	4.87	.91	.00	.00	30.75
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

MC NARY DAM*

APRICOT W/O COVER	BEG 4/28	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	3.11	5.44	9.15	7.25	3.46	.80	.00	.00	29.24
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/17	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.39	6.23	10.19	8.12	4.87	.91	.00	.00	31.71
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 5/ 7	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.22	5.44	9.15	7.25	3.46	.80	.00	.00	28.32
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/19	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.06	5.44	9.15	7.25	3.46	.80	.00	.00	27.16
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 6	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.83	8.63	7.25	4.30	.91	.00	.00	24.92
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/25	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.43	6.23	9.67	12.47	.00	.00	.00	.00	28.80
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/25	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.43	4.26	11.24	9.86	6.27	1.78	.00	.00	33.83
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.49	9.00	12.28	9.42	4.30	.47	.00	.00	39.96
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.41	3.47	2.89	2.90	1.77	.25	.00	.00	12.69
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	4.70	9.39	5.19	.03	.00	.00	19.32
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.39	.92	.81	.31	.00	.00	

MC NARY DAM*

GREEN BEANS	BEG 6/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	00	.00	.00	.00	3.79	6.93	4.80	.00	.00	.00	15.53
AV. PAN FACTOR	.00	00	.00	.00	.00	00	.32	.69	.79	00	00	.00	

CARROTS	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	00	.00	.00	.00	1.51	5.86	11.21	4.09	.00	00	.00	.00	22.67
AV. PAN FACTOR	.00	.00	00	.00	.34	.64	.88	.74	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 6	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.97	6.54	9.10	5.95	1.10	.00	.00	24.66
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.52	.89	91	.66	.00	.00	

SWEET CORN	BEG 6/ 6	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.00	8.66	9.39	.91	.00	.00	.00	20.96
AV. PAN FACTOR	.00	00	.00	.00	.00	.32	.68	.92	.86	.00	.00	.00	

CRUCIFER	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.51	5.64	9.42	.00	.00	.00	.00	.00	16.56
AV. PAN FACTOR	.00	.00	.00	.00	.34	.62	.82	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.51	5.57	4.87	1.39	.00	.00	15.33
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.30	.57	.76	.74	.00	.00	

DRY ONION	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.63	6.73	10.71	8.54	4.65	.26	.00	.00	32.53
AV. PAN FACTOR	.00	.00	.00	.00	.36	.73	.84	.84	.73	.66	.00	.00	

GREEN ONION	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.50	4.68	9.17	.00	.00	.00	.00	.00	15.35
AV. PAN FACTOR	.00	.00	.00	.00	.33	.52	.80	.00	.00	.00	.00	.00	

PEAS	BEG 5/ 8	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.66	7.66	12.21	2.07	.00	.00	.00	.00	23.60
AV. PAN FACTOR	.00	.00	.00	.00	.36	.82	.95	.90	.00	.00	.00	.00	

POTATO	BEG 6/ 6	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.97	7.43	9.42	5.71	.69	.00	.00	25.22
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.59	.92	.88	.68	.00	.00	

MC NARY DAM*

RADISH — BEG 5/ 8 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.61	6.16	.00	.00	.00	.00	.00	.00	8.77
AV. PAN FACTOR	.00	00	.00	.00	.52	.67	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 5/ 8 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.51	5.63	11.73	8.38	.62	.00	.00	.00	27.86
AV. PAN FACTOR	.00	.00	.00	.00	.34	.62	.92	.82	.33	.00	.00	.00	

SORGHUM — BEG 6/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)†	.00	.00	.00	.00	.00	.00	3.79	7.14	5.71	1.38	.00	.00	18.03
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.32	.71	.88	.73	.00	.00	

SOYBEANS — BEG 6/ 6 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.00	7.76	8.98	5.71	.99	.00	.00	25.44
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.61	.88	.88	.62	.00	.00	

SPINACH — BEG 5/ 8 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.51	6.18	2.54	.00	.00	.00	.00	.00	10.23
AV. PAN FACTOR	.00	.00	.00	.00	.34	.67	.78	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/10 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.86	4.42	8.60	11.75	4.79	.00	.00	.00	.00	30.42
AV. PAN FACTOR	.00	.00	.00	.38	.60	.92	.92	.53	.00	.00	.00	.00	

SUGAR BEET — BEG 5/ 8 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)†	.00	.00	.00	.00	1.50	3.86	10.31	9.42	5.96	1.69	.00	.00	32.73
AV. PAN FACTOR	.00	.00	.00	.00	.33	.44	.81	.92	.92	.85	.00	.00	

SUNFLOWER — BEG 5/ 8 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.50	4.83	11.53	9.06	1.49	.00	.00	.00	28.41
AV. PAN FACTOR	.00	.00	.00	.00	.33	.54	.90	.89	.48	.00	.00	.00	

TOMATO — BEG 6/ 6 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)†	.00	.00	.00	.00	.00	1.97	5.57	8.35	5.71	1.02	.00	.00	22.62
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.45	.82	.88	.60	.00	.00	

WINTER WHEAT — BEG 4/10 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.39	6.59	8.60	10.59	2.07	.23	.71	.00	.00	30.18
AV. PAN FACTOR	.00	.00	.00	.53	.86	.92	.83	.37	.12	.45	.75	.00	

SQUASH — BEG 6/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.51	5.57	4.82	.38	.00	.00	14.28
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.30	.57	.75	.65	.00	.00	

METHOW # 48.10 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	23.2	30.9	40.2	47.4	55.7	63.3	69.6	67.6	60.2	48.0	33.7	21.9	
TOTAL PRECIPITATION (IN)	1.49	1.69	1.07	1.11	1.09	.80	.29	1.08	.64	.80	2.15	2.12	14.33
EFFECTIVE PRECIP (IN)	.00	.07	.66	.78	.82	.66	.27	.84	.45	.50	.00	.00	5.06

ALFALFA	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.01	6.80	7.31	5.00	3.36	.31	.00	.00	25.80
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.41	6.71	8.11	5.62	3.76	.38	.00	.00	27.98
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.21	6.35	7.71	5.31	3.56	.35	.00	.00	26.49
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.60	7.41	9.71	6.85	4.37	.31	.00	.00	31.25
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 4/11		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.30	3.51	6.71	8.91	6.23	3.97	.25	.00	.00	29.88
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 4/28		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	3.79	7.41	9.71	6.85	4.37	.31	.00	.00	32.45
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/18		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.18	3.51	6.71	8.91	6.23	3.97	.25	.00	.00	29.77
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 5/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.03	6.71	8.91	6.23	3.97	.25	.00	.00	29.10
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.60	5.30	7.71	5.31	3.36	.16	.00	.00	23.45
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/11	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.20	2.16	4.60	6.92	4.69	2.36	.13	.00	.00	21.06
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/28	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	2.43	5.30	7.71	5.31	3.36	.16	.00	.00	24.29
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/18	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.16	4.60	6.92	4.69	2.36	.13	.00	.00	20.98
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.76	4.60	6.92	4.69	2.36	.13	.00	.00	20.47
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.30	4.25	6.52	4.69	2.96	.16	.00	.00	18.89
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.20	5.30	7.31	8.38	.00	.00	.00	.00	22.20
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.20	3.55	8.51	6.54	4.37	.41	.00	.00	24.57
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	4.87	7.76	9.31	6.23	2.96	.04	.00	.00	31.28
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	1.35	2.85	2.13	1.62	1.15	.00	.00	.00	9.21
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.36	7.51	6.38	.85	.00	.00	.00	16.11
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.78	.94	.49	.00	.00	.00	

GREEN BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.30	5.27	5.31	.98	.00	.00	.00	12.87
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.80	.78	.00	.00	.00	

CARROTS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	2.67	6.87	7.17	.00	.00	.00	.00	.00	16.93
AV. PAN FACTOR	.00	.00	.00	.40	.51	.86	.80	.00	.00	00	.00	.00	

FIELD CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.30	2.76	7.13	6.23	3.71	.16	.00	.00	20.30
AV. PAN FACTOR	.00	.00	.00	.00	.36	.39	.74	.92	.83	.56	.00	.00	

SWEET CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.30	3.26	8.40	4.15	.00	.00	.00	.00	16.11
AV. PAN FACTOR	.00	.00	.00	.00	.36	.45	.87	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	2.60	6.53	1.98	.00	.00	.00	.00	.00	11.35
AV. PAN FACTOR	.00	.00	.00	.40	.51	.82	.71	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.30	4.23	4.85	3.36	.25	.00	.00	14.00
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.45	.74	.76	.67	.00	.00	

DRY ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	3.19	6.71	8.11	5.29	1.58	.00	.00	.00	25.11
AV. PAN FACTOR	.00	.00	.00	.40	.59	.84	.84	.68	.68	.00	.00	.00	

GREEN ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	2.27	5.97	1.96	.00	.00	.00	.00	.00	10.44
AV. PAN FACTOR	.00	.00	.00	.40	.46	.76	.71	.00	.00	.00	.00	.00	

PEAS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	3.55	7.76	5.50	.00	.00	.00	.00	.00	17.03
AV. PAN FACTOR	.00	.00	.00	.40	.64	.96	.93	.00	.00	.00	.00	.00	

POTATO	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.30	2.86	7.93	6.23	3.42	.02	.00	.00	20.76
AV. PAN FACTOR	.00	.00	.00	.00	.36	.40	.82	.92	.77	.61	.00	.00	

METHOW*

RADISH	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.28	3.64	.00	.00	.00	.00	.00	.00	.00	3.92
AV. PAN FACTOR	.00	.00	.00	.44	.66	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	2.61	6.98	8.89	2.10	.00	.00	.00	.00	20.82
AV. PAN FACTOR	.00	.00	.00	.40	.51	.87	.92	.51	.00	.00	.00	.00	

SORGHUM	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.30	5.28	5.37	3.75	.15	.00	.00	16.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.87	.64	.54	.00	.00	

SOYBEANS	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.30	3.10	7.73	5.92	3.61	.10	.00	.00	20.76
AV. PAN FACTOR	.00	.00	.00	.00	.36	.43	.80	.88	.81	47	.00	.00	

SPINACH	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	2.86	3.88	.00	.00	.00	.00	.00	.00	6.97
AV. PAN FACTOR	.00	.00	.00	.40	.54	.79	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 4/ 2	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.63	4.21	7.41	8.58	1.49	.00	.00	.00	.00	22.31
AV. PAN FACTOR	.00	.00	.00	.40	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.23	2.05	5.49	8.88	6.23	3.96	.36	.00	.00	27.20
AV. PAN FACTOR	.00	.00	.00	.40	.42	.70	.92	.92	.86	.82	.00	.00	

SUNFLOWER	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	2.31	6.62	8.91	3.43	.00	.00	.00	.00	21.51
AV. PAN FACTOR	.00	.00	.00	.40	.46	.83	.92	.63	.00	.00	.00	.00	

TOMATO	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.30	2.56	6.23	5.92	3.58	.07	.00	.00	18.66
AV. PAN FACTOR	.00	.00	.00	.00	.36	.37	.65	.88	.80	.44	.00	.00	

WINTER WHEAT	BEG 4/ 2	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.51	5.31	7.41	6.90	.38	.00	.36	.00	.00	21.86
AV. PAN FACTOR	.00	.00	.00	.62	.91	.92	.72	.28	.12	.50	.00	.00	

SQUASH	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.30	4.23	4.85	1.81	.00	.00	.00	12.19
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.45	.74	.70	.00	.00	.00	

(WA210-VI-WAIG, OCTOBER 1985)

MONROE 47.85 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
N TEMPERATURE (F)	38.3	42.4	44.3	49.4	55.3	60.3	64.2	63.9	59.7	52.3	44.1	40.4	
AL PRECIPITATION (IN)	6.66	4.89	4.70	3.57	2.82	2.46	1.28	2.00	2.83	4.28	6.14	6.87	48.50
ECTIVE PRECIP (IN)	.20	.70	1.48	2.21	1.99	1.85	.96	1.43	1.88	1.44	.39	.09	14.62

ALFA BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.36	2.19	3.89	2.41	.81	.00	.00	.00	9.66
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

VER BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.68	2.90	4.74	3.09	1.29	.02	.00	.00	12.72
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

TURE/TURF BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.57	2.67	4.46	2.86	1.13	.00	.00	.00	11.68
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

LES W/COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.16	3.38	5.88	3.99	1.76	.00	.00	.00	15.18
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

LE W/O COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.95	4.17	2.64	.81	.00	.00	.00	9.57
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

APES BEG 6/10 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.55	3.60	2.19	.49	.00	.00	.00	6.83
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

SPBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.35	3.85	5.88	3.77	.81	.00	.00	.00	16.66
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.53	.75	.38	.00	.00	.00	.00	1.66
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.83	1.82	1.13	.00	.00	.00	3.78
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.85	3.02	1.10	.00	.00	.00	.00	.00	5.98
AV. PAN FACTOR	.00	.00	.00	.45	.74	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.58	3.28	1.60	.00	.00	.00	7.46
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.43	3.54	.15	.00	.00	.00	7.11
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.70	1.41	.00	.00	.00	.00	.00	.00	3.10
AV. PAN FACTOR	.00	.00	.00	.45	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.83	1.26	.93	.00	.00	.00	3.01
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.81	2.67	4.40	1.60	.00	.00	.00	.00	10.48
AV. PAN FACTOR	.00	.00	.00	.48	.73	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.32	1.37	.00	.00	.00	.00	.00	.00	2.69
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.57	2.89	.00	.00	.00	.00	.00	.00	5.46
AV. PAN FACTOR	.00	.00	.00	.50	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.89	3.50	1.52	.00	.00	.00	7.91
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

RADISH BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.23	.00	.00	.00	.00	.00	.00	.00	1.23
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.74	.00	.00	.00	.00	.00	.00	.00	1.74
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 2/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.86	2.56	1.98	.09	.00	.00	.00	.00	.00	5.48
AV. PAN FACTOR	.00	.65	.70	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO BEG 6/10 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.20	2.88	1.44	.00	.00	.00	6.53
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.44	.76	.84	.64	.35	.00	

WINTER WHEAT BEG 2/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	.88	2.39	.02	.00	.00	.00	.00	.00	.00	3.52
AV. PAN FACTOR	.00	1.00	.91	.88	.85	.42	.12	.12	.12	.53	.80	1.25	

SQUASH BEG 7/ 9 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.83	1.26	.93	.00	.00	.00	3.01
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.48	.71	.65	.00	.00	

MOSES LAKE 47.12 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	26.5	34.5	41.2	48.9	57.1	64.1	70.3	68.8	60.5	49.1	36.8	30.3	
TOTAL PRECIPITATION (IN)	.95	.69	.59	.53	.72	.57	.26	.35	.37	.55	.99	1.17	7.74
EFFECTIVE PRECIP (IN)	.00	.13	.38	.39	.59	.52	.25	.34	.30	.36	.10	.00	3.35

ALFALFA BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.42	7.25	9.58	7.91	5.12	1.74	.00	.00	37.01
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.06	8.06	10.62	8.78	5.69	1.98	.00	.00	41.19
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.74	7.66	10.10	8.34	5.40	1.86	.00	.00	39.10
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.14	5.06	8.88	12.69	10.51	6.54	1.74	.00	.00	45.57
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/29 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.57	4.73	8.06	11.66	9.65	5.97	1.50	.00	.00	43.15
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/15 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.67	5.06	8.88	12.69	10.51	6.54	1.74	.00	.00	46.09
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.09	4.73	8.06	11.66	9.65	5.97	1.50	.00	.00	42.66
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/18 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.52	4.73	8.06	11.66	9.65	5.97	1.50	.00	.00	42.09
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MA
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	3.4
AV. PAN FACTOR	.32	.32	.32	.32	.4

MOSES LAKE

APRICOT W/O COVER	BEG 3/29	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.35	3.07	5.61	9.07	7.48	3.69	1.02	.00	.00	31.29
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/15	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.56	3.40	6.43	10.10	8.34	5.12	1.14	.00	.00	35.09
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.93	3.07	5.61	9.07	7.48	3.69	1.02	.00	.00	30.85
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/18	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.44	3.07	5.61	9.07	7.48	3.69	1.02	.00	.00	30.37
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.81	5.20	8.55	7.48	4.55	1.14	.00	.00	27.71
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.52	6.43	9.58	12.68	.00	.00	.00	.00	31.22
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.52	4.38	11.14	10.08	6.54	2.10	.00	.00	36.76
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.93	6.39	9.29	12.17	9.65	4.55	.65	.00	.00	43.63
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.93	2.07	3.57	2.85	3.14	1.98	.41	.00	.00	14.94
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.62	10.95	9.17	.63	.00	.00	.00	23.37
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.87	.88	.38	.00	.00	.00	

(WA210-VI-WAIG, OCTOBER 1985)

GREEN BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	00	.00	.00	.00	2.24	7.97	8.31	.51	.00	.00	.00	19.04
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.18	5.09	8.44	4.78	.00	.00	.00	.00	.00	19.49
AV. PAN FACTOR	.00	.00	.00	.38	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.73	3.54	9.90	9.65	5.34	.24	.00	.00	29.38
AV. PAN FACTOR	.00	.00	.00	.00	.33	.40	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.73	4.37	11.33	5.45	.00	.00	.00	.00	21.88
AV. PAN FACTOR	.00	.00	.00	.00	.33	.48	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.18	4.89	6.74	.00	.00	.00	.00	.00	.00	12.81
AV. PAN FACTOR	.00	.00	.00	.38	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.17	6.35	7.07	5.07	.59	.00	.00	22.06
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.28	5.67	8.06	10.59	7.56	.57	.00	.00	.00	33.73
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.17	4.14	6.59	.00	.00	.00	.00	.00	.00	11.90
AV. PAN FACTOR	.00	.00	.00	.38	.57	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.30	6.49	9.22	2.19	.00	.00	.00	.00	.00	19.20
AV. PAN FACTOR	.00	.00	.00	.41	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.73	3.75	10.86	9.63	4.44	.00	.00	.00	29.41
AV. PAN FACTOR	.00	.00	.00	.00	.33	.42	.86	.92	.74	.00	.00	.00	

MOSES LAKE

RADISH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.88	4.99	.00	.00	.00	.00	.00	.00	.00	6.87
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.18	4.93	8.88	10.23	.98	.00	.00	.00	.00	26.20
AV. PAN FACTOR	.00	.00	.00	.38	.66	.92	.81	.31	.00	.00	.00	.00	

SORGHUM — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.24	8.08	9.21	5.47	.45	.00	.00	25.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.88	.81	.54	.00	.00	

SOYBEANS — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.73	4.07	10.50	9.21	5.17	.17	.00	.00	29.86
AV. PAN FACTOR	.00	.00	.00	.00	.33	.45	.83	.88	.77	.43	.00	.00	

SPINACH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.19	5.24	1.45	.00	.00	.00	.00	.00	.00	7.88
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.41	3.04	7.05	8.88	6.89	.00	.00	.00	.00	.00	26.27
AV. PAN FACTOR	.00	.00	.47	.63	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.17	3.48	7.98	11.66	9.59	5.73	.24	.00	.00	39.84
AV. PAN FACTOR	.00	.00	.00	.38	.49	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.17	4.30	8.79	11.12	2.31	.00	.00	.00	.00	27.68
AV. PAN FACTOR	.00	.00	.00	.38	.59	.91	.88	.47	.00	.00	.00	.00	

TOMATO — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.73	3.18	8.74	9.21	5.25	.29	.00	.00	27.41
AV. PAN FACTOR	.00	.00	.00	.00	.33	.36	.70	.88	.78	.43	.00	.00	

WINTER WHEAT — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.73	4.36	7.06	8.16	3.23	.95	.49	.83	.00	.00	25.79
AV. PAN FACTOR	.00	.00	.67	.87	.92	.85	.39	.12	.12	.46	.84	.00	

SQUASH — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.17	6.35	7.86	1.86	.00	.00	.00	18.24
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.65	.00	.00	.00	

MOXEE CITY

MOXEE CITY 46.52 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	28.2	35.3	40.5	47.1	54.7	62.2	68.3	67.0	60.1	49.3	37.4	30.9	
TOTAL PRECIPITATION (IN)	1.00	.65	.61	.66	.61	.65	.26	.49	.43	.58	.96	.99	7.89
EFFECTIVE PRECIP (IN)	.00	.17	.39	.46	.49	.56	.25	.44	.33	.37	.10	.00	3.58

ALFALFA — BEG 4/23 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.62	5.15	6.42	8.47	6.79	4.38	1.42	.00	.00	33.25
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER — BEG 4/23 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.70	5.74	7.16	9.39	7.55	4.87	1.62	.00	.00	37.04
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF — BEG 4/23 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.66	5.44	6.79	8.93	7.17	4.63	1.52	.00	.00	35.15
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER — BEG 4/20 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	4.55	7.90	11.23	9.07	5.62	1.42	.00	.00	40.13
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER — BEG 3/23 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.08	1.31	4.26	7.16	10.31	8.31	5.12	1.22	.00	.00	37.77
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER — BEG 4/ 9 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.74	4.55	7.90	11.23	9.07	5.62	1.42	.00	.00	40.54
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER — BEG 3/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.08	4.26	7.16	10.31	8.31	5.12	1.22	.00	.00	37.46
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER — BEG 4/12 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.63	4.26	7.16	10.31	8.31	5.12	1.22	.00	.00	37.01
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER — BEG 4/20 — END 10/27

	JAN	FEB	MAR	APR	MAY	J'
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.27	3.07	'
AV. PAN FACTOR	.32	.32	.32	.32	.48	

MOXEE CITY

APRICOT W/O COVER	BEG 3/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.05	1.11	2.77	4.95	8.01	6.41	3.14	.81	.00	.00	27.27
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/ 9	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.61	3.07	5.69	8.93	7.17	4.38	.91	.00	.00	30.77
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 3/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.89	2.77	4.95	8.01	6.41	3.14	.81	.00	.00	26.99
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/12	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.52	2.77	4.95	8.01	6.41	3.14	.81	.00	.00	26.62
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.26	4.59	7.56	6.41	3.88	.91	.00	.00	24.61
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	2.48	5.69	8.47	10.98	.00	.00	.00	.00	27.88
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	2.48	3.85	9.85	8.69	5.62	1.73	.00	.00	32.48
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.11	5.74	8.26	10.77	8.31	3.88	.51	.00	.00	38.59
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.11	1.88	3.11	2.50	2.60	1.65	.31	.00	.00	13.17
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.99	10.20	7.28	.20	.00	.00	.00	20.67
AV. PAN FACTOR	.00	.00	.00	.00	.00	.41	.91	.81	.31	.00	.00	.00	

[illegible] PLANTS BEG 5/31 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET [illegible] (IN)	.00	.00	.00	.00	.00	2.43	7.45	6.05	.00	.00	.00	.00	16.07
AV. PAN FACTOR	.00	.00	.00	.00	.00	.54	.69	.77	.00	.00	.00	.00	

CARROTS BEG 5/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET [illegible] (IN)	.00	.00	.00	2.00	5.40	7.51	3.24	.00	.00	.00	.00	.00	16.91
AV. PAN FACTOR	.00	.00	.40	.50	.79	.82	.69	.00	.00	.00	.00	.00	

[illegible] BEG 5/11 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET [illegible] (IN)	.00	.00	.00	.00	1.20	5.09	9.63	8.51	5.74	.00	.00	.00	26.77
AV. PAN FACTOR	.00	.00	.00	.00	.75	.48	.76	.72	.69	.00	.00	.00	

[illegible] BEG 5/11 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET [illegible] (IN)	.00	.00	.00	.00	1.20	5.09	10.31	2.54	.00	.00	.00	.00	19.14
AV. PAN FACTOR	.00	.00	.00	.00	.75	.61	.97	.58	.00	.00	.00	.00	

[illegible] BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET [illegible] (IN)	.00	.00	.00	1.77	5.16	4.30	.00	.00	.00	.00	.00	.00	11.45
AV. PAN FACTOR	.00	.00	.41	.50	.76	.81	.00	.00	.00	.00	.00	.00	

[illegible] BEG 5/31 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET [illegible] (IN)	.00	.00	.00	.00	.00	2.26	6.24	6.79	4.21	.57	.00	.00	19.94
AV. PAN FACTOR	.00	.00	.00	.00	.00	.57	.57	.76	.74	.64	.00	.00	

[illegible] BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET [illegible] (IN)	.00	.00	.00	2.16	5.57	7.16	9.26	5.76	.00	.00	.00	.00	29.91
AV. PAN FACTOR	.00	.00	.49	.53	.82	.84	.85	.71	.00	.00	.00	.00	

[illegible] BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET [illegible] (IN)	.00	.00	.00	1.91	4.64	4.25	.00	.00	.00	.00	.00	.00	10.80
AV. PAN FACTOR	.00	.00	.48	.48	.69	.80	.00	.00	.00	.00	.00	.00	

PEAS BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET [illegible] (IN)	.00	.00	.00	2.25	6.40	7.72	.00	.00	.00	.00	.00	.00	16.37
AV. PAN FACTOR	.00	.00	.48	.55	.93	.94	.00	.00	.00	.00	.00	.00	

POTATO BEG 5/11 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET [illegible] (IN)	.00	.00	.00	.00	1.20	4.31	10.10	8.11	2.48	.00	.00	.00	26.20
AV. PAN FACTOR	.00	.00	.00	.00	.75	.53	.91	.90	.70	.00	.00	.00	

RADISH — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.55	.69	.00	.00	.00	.00	.00	.00	.00	3.25
AV. PAN FACTOR	.00	.00	.48	.61	.66	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.00	5.39	7.90	7.59	.14	.00	.00	.00	.00	23.01
AV. PAN FACTOR	.00	.00	.48	.50	.79	.92	.68	.21	.00	.00	.00	.00	

SORGHUM — BEG 5/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.43	7.85	7.93	4.45	.26	.00	.00	22.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.71	.88	.77	.51	.00	.00	

SOYBEANS — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.20	4.59	9.75	7.93	3.52	.00	.00	.00	26.99
AV. PAN FACTOR	.00	.00	.00	.00	.35	.56	.87	.88	.66	.00	.00	.00	

SPINACH — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.02	4.86	.00	.00	.00	.00	.00	.00	.00	6.89
AV. PAN FACTOR	.00	.00	.48	.51	.76	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/ 4 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.54	3.23	6.34	7.71	3.65	.00	.00	.00	.00	.00	21.47
AV. PAN FACTOR	.00	.00	.48	.75	.92	.90	.45	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.89	4.19	7.60	10.31	8.18	4.28	.00	.00	.00	36.45
AV. PAN FACTOR	.00	.00	.48	.48	.63	.89	.92	.91	.84	.00	.00	.00	

SUN-FLOWER — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.92	4.98	7.90	8.94	.81	.00	.00	.00	.00	24.54
AV. PAN FACTOR	.00	.00	.48	.48	.74	.92	.80	.38	.00	.00	.00	.00	

TOMATO — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.20	3.36	8.76	7.93	3.82	.06	.00	.00	25.14
AV. PAN FACTOR	.00	.00	.00	.00	.35	.43	.79	.88	.67	.36	.00	.00	

WINTER WHEAT — BEG 3/ 4 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	1.06	4.01	6.34	6.29	1.34	.65	.31	.77	.00	.00	20.77
AV. PAN FACTOR	.00	.00	.72	.91	.92	.74	.30	.12	.12	.46	.83	.00	

SQUASH — BEG 5/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.26	6.24	6.67	1.14	.00	.00	.00	16.31
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.57	.75	.68	.00	.00	.00	

NESPELEM # 48.13 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	23.5	31.3	38.8	46.3	55.3	62.3	68.4	68.0	58.9	47.5	35.9	26.1	
TOTAL PRECIPITATION (IN)	1.48	1.06	.89	.96	1.27	.94	.53	.65	.68	1.00	1.54	1.67	12.67
EFFECTIVE PRECIP (IN)	.00	.06	.55	.67	.94	.76	.52	.58	.51	.63	.08	.00	5.29

ALFALFA	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.85	5.77	8.22	6.81	4.08	.24	.00	.00	26.96
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.11	6.45	9.14	7.58	4.56	.30	.00	.00	30.14
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.98	6.11	8.68	7.20	4.32	.27	.00	.00	28.55
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.70	7.14	10.98	9.14	5.28	.24	.00	.00	34.47
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 4/16		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	3.34	6.45	10.06	8.36	4.80	.18	.00	.00	33.45
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 5/ 4		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.76	7.14	10.98	9.14	5.28	.24	.00	.00	35.53
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	3.34	6.45	10.06	8.36	4.80	.18	.00	.00	33.27
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.24	6.45	10.06	8.36	4.80	.18	.00	.00	32.09
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.00	5.08	8.68	7.20	4.08	.09	.00	.00	26.12
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

COT W/O COVER — BEG 4/16 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.18	2.00	4.39	7.76	6.42	2.87	.06	.00	.00	23.69
AV. PAN FACTOR	.32	.32	.32	32	.44	.60	.72	.72	.56	.52	.32	.32	

RY W/O COVER — BEG 5/ 4 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.63	5.08	8.60	7.20	4.08	.09	.00	.00	26.75
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

H W/O COVER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.06	2.00	4.39	7.76	6.42	2.87	.06	.00	.00	23.56
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

& PLUM W/O COVER — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.24	4.39	7.76	6.42	2.87	.06	.00	.00	22.74
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

ES — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.61	7.30	6.42	3.59	.09	.00	.00	21.01
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

BEG 5/15 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.68	5.08	8.22	11.08	.00	.00	.00	.00	25.06
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

BEG 5/15 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.68	3.36	9.60	8.75	5.28	.33	.00	.00	28.00
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

BERRY — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.06	4.68	7.49	10.52	8.36	3.59	.00	.00	.00	34.70
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

BERRY — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.06	1.20	2.67	2.24	2.53	1.42	.00	.00	.00	10.13
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

BEANS — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.50	5.95	8.75	2.81	.00	.00	.00	18.01
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.96	.67	.00	.00	.00	

GREEN BEANS — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.50	4.31	6.90	2.72	.00	.00	.00	14.43
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	2.16	6.29	9.03	.75	.00	.00	.00	.00	18.33
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.77	6.40	8.28	4.82	11	.00	.00	21.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.88	.59	.00	.00	

SWEET CORN — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.93	8.29	8.16	.00	.00	.00	.00	18.38
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	2.13	5.99	4.19	.00	.00	.00	.00	.00	12.42
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.50	3.70	5.95	4.06	.23	.00	.00	14.47
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	2.53	6.39	9.14	7.36	2.70	.00	.00	.00	28.22
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	1.92	5.36	4.19	.00	.00	.00	.00	.00	11.58
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	2.73	7.41	8.25	.00	.00	.00	.00	.00	18.50
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.78	7.39	8.36	4.61	.16	.00	.00	22.30
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

RADISH — BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	3.21	.00	.00	.00	.00	.00	.00	.00	3.32
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	2.13	6.30	10.06	4.78	.00	.00	.00	.00	23.37
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	.00	

SORGHUM — BEG 6/21 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.50	4.31	7.34	4.80	.16	.00	.00	17.11
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.81	.88	.66	.00	.00	

SOYBEANS — BEG 6/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.90	7.47	7.97	4.71	.07	.00	.00	22.12
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.69	.88	.87	.53	.00	.00	

SPINACH — BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	2.25	4.76	.00	.00	.00	.00	.00	.00	7.12
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.72	4.04	7.14	9.68	2.36	.00	.00	.00	.00	23.95
AV. PAN FACTOR	.00	.00	.00	.41	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.11	1.81	4.69	9.85	8.36	4.86	.28	.00	.00	29.95
AV. PAN FACTOR	.00	.00	.00	.41	.41	.63	.90	.92	.89	.82	.00	.00	

SUNFLOWER — BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	1.93	5.83	10.06	6.42	.12	.00	.00	.00	24.47
AV. PAN FACTOR	.00	.00	.00	.41	.43	.77	.92	.72	.32	.00	.00	.00	

TOMATO — BEG 6/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.75	5.41	7.71	4.71	.05	.00	.00	19.63
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT — BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.57	5.12	7.14	7.74	.73	.04	.14	.00	.00	22.49
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.50	1.28	.00	

SQUASH — BEG 6/21 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.50	3.70	5.95	3.66	.00	.00	.00	13.82
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

[illegible] IRRIGATION

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	24.5	30.8	35.6	44.5	52.9	59.9	65.8	64.3	56.1	45.2	33.6	27.7	
TOTAL PRECIPITATION (IN)	3.97	2.65	2.17	1.07	2.16	1.76	.93	1.29	1.32	2.07	3.55	4.20	27.94
EFFECTIVE PRECIP (IN)	.00	.00	1.07	1.29	1.59	1.37	.87	1.05	.96	1.19	.00	.00	9.47

ALFALFA — PLG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRED (IN)	.00	.00	.00	.00	1.27	4.05	7.44	5.80	3.30	.00	.00	.00	22.64
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

[illegible] — PLG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRED (IN)	.00	.00	.00	.00	1.51	5.48	8.32	6.52	3.75	.00	.00	.00	25.58
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

[illegible] — PLG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRED (IN)	.00	.00	.00	.00	1.39	5.15	7.80	6.16	3.52	.00	.00	.00	24.11
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

[illegible] — PLG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRED (IN)	.00	.00	.00	.00	1.09	6.13	10.07	7.96	4.42	.00	.00	.00	29.68
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

[illegible] — PLG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRED (IN)	.00	.00	.00	.00	2.43	5.48	9.19	7.24	3.97	.00	.00	.00	28.32
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

[illegible] — PLG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRED (IN)	.00	.00	.00	.00	1.77	6.13	10.07	7.96	4.42	.00	.00	.00	30.36
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

[illegible] — PLG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRED (IN)	.00	.00	.00	.00	2.43	5.48	9.19	7.24	3.97	.00	.00	.00	28.32
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

[illegible] — PLG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRED (IN)	.00	.00	.00	.00	1.58	5.48	9.19	7.24	3.97	.00	.00	.00	27.27
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

[illegible] — PLG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRED (IN)	.00	.00	.00	.00	.44	4.18	7.88	6.16	3.30	.00	.00	.00	21.96
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

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APRICOT W/O COVER	BEG 4/16		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.17	3.52	7.00	5.44	2.18	.00	.00	.00	19.32
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	4.18	7.88	6.16	3.30	.00	.00	.00	22.24
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.17	3.52	7.00	5.44	2.18	.00	.00	.00	19.32
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.45	3.52	7.00	5.44	2.18	.00	.00	.00	18.60
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.62	6.57	5.44	2.85	.00	.00	.00	17.48
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.17	4.18	7.44	9.77	.00	.00	.00	.00	21.56
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.17	2.54	8.76	7.60	4.42	.00	.00	.00	23.50
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.69	6.46	9.63	7.24	2.85	.00	.00	.00	29.87
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.42	1.89	1.75	1.83	.83	.00	.00	.00	6.73
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	5.32	7.60	2.04	.00	.00	.00	15.22
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.57	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	3.77	5.89	2.07	.00	.00	.00	11.98
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.37	5.33	8.21	.61	.00	.00	.00	.00	15.52
AV. PAN FACTOR	.00	.00	.00	.41	.47	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.91	5.74	7.17	3.99	.00	.00	.00	17.81
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.07	7.52	6.89	.00	.00	.00	.00	15.48
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.34	5.05	3.79	.00	.00	.00	.00	.00	10.17
AV. PAN FACTOR	.00	.00	.00	.41	.47	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.26	3.20	5.02	3.30	.00	.00	.00	11.77
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.70	5.42	8.32	6.31	1.98	.00	.00	.00	23.74
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.14	4.45	3.79	.00	.00	.00	.00	.00	9.38
AV. PAN FACTOR	.00	.00	.00	.41	.44	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.90	6.38	7.51	.00	.00	.00	.00	.00	15.79
AV. PAN FACTOR	.00	.00	.00	.41	.56	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.92	6.68	7.24	3.80	.00	.00	.00	18.64
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.69	.92	.85	.65	.00	.00	

NEWPORT

RADISH	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.32	.00	.00	.00	.00	.00	.00	.00	2.32
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.34	5.35	9.19	3.79	.00	.00	.00	.00	19.67
AV. PAN FACTOR	.00	.00	.00	.41	.47	.82	.92	.59	.00	.00	.00	.00	

SORGHUM	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.26	3.77	6.30	3.97	.00	.00	.00	14.30
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

SOYBEANS	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.03	6.75	6.88	3.89	.00	.00	.00	18.55
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.45	3.80	.00	.00	.00	.00	.00	.00	5.25
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 4/ 2	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.11	6.13	8.83	1.73	.00	.00	.00	.00	19.80
AV. PAN FACTOR	.00	.00	.00	.42	.75	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	1.04	3.84	9.00	7.24	4.03	.00	.00	.00	25.15
AV. PAN FACTOR	.00	.00	.00	.41	.42	.64	.90	.92	.89	.82	.00	.00	

SUNFLOWER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	4.91	9.19	5.44	.05	.00	.00	.00	20.74
AV. PAN FACTOR	.00	.00	.00	.41	.44	.77	.92	.72	.32	.00	.00	.00	

TOMATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.90	4.80	6.64	3.88	.00	.00	.00	16.23
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT	BEG 4/ 2	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.64	4.11	6.13	6.99	.44	.00	.00	.00	.00	18.30
AV. PAN FACTOR	.00	.00	.00	.64	.91	.92	.72	.28	.12	.52	.00	.00	

SQUASH	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	3.20	5.02	2.71	.00	.00	.00	11.19
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

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	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	25.6	32.0	38.9	48.6	57.5	64.0	69.8	68.1	59.7	48.1	35.5	28.9	
TOTAL PRECIPITATION (IN)	2.33	1.64	1.35	1.28	1.87	1.92	.98	1.36	1.16	1.41	2.11	2.65	20.06
EFFECTIVE PRECIP (IN)	.00	.12	.83	.91	1.41	1.55	.95	1.16	.85	.88	.05	.00	8.70

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.72	5.27	8.09	6.27	3.83	.12	.00	.00	25.30
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.99	5.99	9.04	7.06	4.32	.18	.00	.00	28.58
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.86	5.63	8.57	6.66	4.08	.15	.00	.00	26.94
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.54	6.70	10.95	8.62	5.06	.12	.00	.00	32.99
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.18	3.16	5.99	9.99	7.84	4.57	.06	.00	.00	31.78
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.50	6.70	10.95	8.62	5.06	.12	.00	.00	33.95
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	3.16	5.99	9.99	7.84	4.57	.06	.00	.00	31.66
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.00	5.99	9.99	7.84	4.57	.06	.00	.00	30.44
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	4.55	8.57	6.66	3.83	.00	.00	.00	24.41
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

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APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	1.73	3.83	7.61	5.88	2.60	.00	.00	.00	21.76
AV. PAN FACTOR	.32	.32	.32	.32	44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.30	4.55	8.57	6.66	3 83	.00	.00	.00	24.91
AV. PAN FACTOR	.32	.32	.32	.32	.48	68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	1.73	3.83	7.61	5.88	2.60	.00	.00	.00	21.69
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.94	3.83	7.61	5.88	2.60	.00	.00	.00	20.87
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.90	7.14	5.88	3.34	.00	.00	.00	19.25
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.48	4.55	8.09	10.58	.00	.00	.00	.00	23.70
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.48	2.76	9.52	8.23	5.06	.21	.00	.00	26.25
AV PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	4.58	7.06	10.47	7.84	3.34	.00	.00	.00	33.32
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	.88	2.04	1.90	1.97	1.12	.00	.00	.00	7.94
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	5.71	8.23	2.48	.00	.00	.00	16.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.56	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	4.00	6.36	2.47	.00	.00	.00	13.09
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.83	5.80	8.93	.66	.00	.00	.00	.00	17.30
AV. PAN FACTOR	.00	.00	.00	.40	.45	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.94	6.18	7.75	4.59	.00	.00	.00	19.46
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.11	8.15	7.52	.00	.00	.00	.00	16.77
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.76	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.80	5.49	4.13	.00	.00	.00	.00	.00	11.49
AV. PAN FACTOR	.00	.00	.00	.40	.45	.78	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.26	3.37	5.41	3.83	.11	.00	.00	12.98
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.36	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	2.23	5.92	9.04	6.83	2.40	.00	.00	.00	26.50
AV. PAN FACTOR	.00	.00	.00	.40	.51	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.57	4.82	4.13	.00	.00	.00	.00	.00	10.60
AV. PAN FACTOR	.00	.00	.00	.40	.42	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	2.45	6.98	8.19	.00	.00	.00	.00	.00	17.70
AV. PAN FACTOR	.00	.00	.00	.40	.54	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.95	7.21	7.84	4.38	.04	.00	.00	20.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

RADISH BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	3.00	.00	00	.00	.00	.00	.00	.00	3.08
AV. PAN FACTOR	.00	.00	.00	.40	.62	.00	00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.80	5.81	9.99	4.15	.00	.00	.00	.00	21.83
AV. PAN FACTOR	.00	.00	.00	.40	.45	.82	.92	.59	.00	.00	.00	.00	

SORGHUM BEG 6/21 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.26	4.00	6.81	4.57	.04	.00	.00	15.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.42	.81	.88	.66	.00	.00	

SOYBEANS BEG 6/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.07	7.29	7.45	4.48	.00	.00	.00	20.29
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.69	.88	.87	.53	.00	.00	

SPINACH BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.94	4.19	.00	.00	.00	.00	.00	.00	6.20
AV. PAN FACTOR	.00	.00	.00	.40	.47	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.53	3.88	6.70	9.60	1.90	.00	.00	.00	.00	22.61
AV. PAN FACTOR	.00	.00	.00	.40	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.08	1.45	4.09	9.77	7.84	4.63	.16	.00	.00	28.01
AV. PAN FACTOR	.00	.00	.00	.40	.40	.63	.90	.92	.89	.82	.00	.00	

SUNFLOWER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.59	5.30	9.99	5.88	.08	.00	.00	.00	22.92
AV. PAN FACTOR	.00	.00	.00	.40	.42	.76	.92	.72	.32	.00	.00	.00	

TOMATO BEG 6/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.92	5.14	7.18	4.47	.00	.00	.00	17.72
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.51	.85	.86	.51	.00	.00	

WINTER WHEAT BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.44	5.05	6.70	7.59	.49	.00	.00	.00	.00	21.28
AV. PAN FACTOR	.00	.00	.00	.61	.91	.92	.72	.28	.12	.50	1.54	.00	

SQUASH BEG 6/21 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	3.37	5.41	3.27	.00	.00	.00	12.31
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.36	.67	.72	.00	.00	.00	

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.5	41.9	43.5	48.0	53.4	58.4	62.9	63.0	58.9	51.5	44.1	40.4	
TOTAL PRECIPITATION (IN)	9.82	6.22	6.04	3.68	2.34	1.94	.77	1.61	2.73	5 21	8.02	9.89	58.27
EFFECTIVE PRECIP (IN)	.11	.70	1.48	2.30	1.71	1.40	.61	1.18	1.86	1.56	.43	.08	13.44

ALFALFA	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.90	2.80	4.60	3.15	1.09	.00	.00	.00	12.53
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.32	3.54	5.52	3.91	1.61	.03	.00	.00	15.93
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.18	3.30	5.21	3.66	1.43	.00	.00	.00	14.78
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 5/ 4		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	4.04	6.75	4.93	2.13	.00	.00	.00	18.64
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 5/ 4		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.06	2.55	4.91	3.40	1.09	.00	.00	.00	12.01
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 6/ 3		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.32	4.29	2.89	.74	.00	.00	.00	9.24
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.90	4.53	6.75	4.67	1.09	.00	.00	.00	19.94
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.04	1.07	1.23	.85	.00	.00	.00	.00	3.20
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/29		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.88	4.49	1.42	.00	.00	.00	8.78
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.46	.89	.76	.29	.00	.00	

OAKVILLE

GREEN BEANS — BEG 6/29 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.37	3.16	.47	.00	.00	.00	6.00
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.39	.68	.75	.00	.00	.00	

CARROTS — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.63	3.55	.79	.00	.00	.00	.00	.00	6.98
AV. PAN FACTOR	.00	.00	.53	.56	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.27	3.81	4.33	1.88	.00	.00	.00	10.29
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.58	.87	.86	.60	.00	.00	

SWEET CORN — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.33	4.91	4.37	.05	.00	.00	.00	9.65
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.72	.87	.81	.00	.00	.00	

CRUCIFER — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.45	1.48	.00	.00	.00	.00	.00	.00	3.93
AV. PAN FACTOR	.00	.00	.53	.56	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER — BEG 6/29 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.22	2.52	1.26	.00	.00	.00	6.00
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.72	.70	.59	.00	

DRY ONION — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.42	3.30	5.10	2.04	.00	.00	.00	.00	12.86
AV. PAN FACTOR	.00	.00	.53	.58	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.13	1.47	.00	.00	.00	.00	.00	.00	3.60
AV. PAN FACTOR	.00	.00	.53	.54	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.27	3.12	.00	.00	.00	.00	.00	.00	6.39
AV. PAN FACTOR	.00	.00	.53	.61	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.27	4.34	4.42	1.70	.00	.00	.00	10.73
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.65	.88	.82	.62	.00	.00	

RADISH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	00	.00	.06	.00	.00	.00	.00	.00	.00	.00	.06
AV. PAN FACTOR	.00	.00	.53	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.51	.00	.00	.00	.00	.00	.00	.00	1.51
AV. PAN FACTOR	.00	.00	.53	.56	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	3.12	2.58	.19	.00	.00	.00	.00	.00	6.78
AV. PAN FACTOR	.00	.65	.70	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/ 3		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.26	3.25	3.96	1.77	.00	.00	.00	9.24
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	.91	2.94	.53	.15	.00	.00	.00	.00	.00	4.77
AV. PAN FACTOR	.00	1.00	.91	.88	.85	.42	.12	.12	.12	.52	.77	1.33	

SQUASH	BEG 6/29		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.22	2.52	1.22	.00	.00	.00	5.96
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.71	.60	.00	.00	

ODESSA 47.33 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	27.4	34.9	40.7	48.5	56.7	64.3	70.9	69.2	61 1	49.4	37.1	30.7	
TOTAL PRECIPITATION (IN)	1.29	.90	.83	.65	.90	.57	.31	38	51	.66	1.31	1.49	9.80
EFFECTIVE PRECIP (IN)	.00	.13	.53	.47	.72	.53	.30	.37	.41	.43	.21	.00	4.11

ALFALFA BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.20	7.29	9.66	7.95	5.08	1.65	.00	.00	36.83
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.84	8.11	10.71	8.83	5.66	1.89	.00	.00	41.04
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.52	7.70	10.19	8.39	5.37	1.77	.00	.00	38.94
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	4.89	8.94	12.81	10.58	6.53	1.65	.00	.00	45.52
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/29 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.47	4.56	8.11	11.76	9.70	5.95	1.41	.00	.00	42.96
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/15 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.60	4.89	8.94	12.81	10.58	6.53	1.65	.00	.00	45.99
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.99	4.56	8.11	11.76	9.70	5.95	1.41	.00	.00	42.48
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/18 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.47	4.56	8.11	11.76	9.70	5.95	1.41	.00	.00	41.96
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	3.24	6.47	10.19	8.39	5.08	1.04	.00	.00	34.51
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 3/29		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.25	2.91	5.65	9.14	7.51	3.64	.92	.00	.00	31.01
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/15		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.50	3.24	6.47	10.19	8.39	5.08	1.04	.00	.00	34.90
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.82	2.91	5.65	9.14	7.51	3.64	.92	.00	.00	30.58
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/18		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.39	2.91	5.65	9.14	7.51	3.64	.92	.00	.00	30.15
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/19		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.73	5.23	8.61	7.51	4.50	1.04	.00	.00	27.64
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.32	6.47	9.66	12.77	.00	.00	.00	.00	31.22
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.32	4.41	11.23	10.14	6.53	2.02	.00	.00	36.65
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.82	6.21	9.35	12.28	9.70	4.50	.56	.00	.00	43.42
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.82	1.92	3.59	2.84	3.14	1.90	.31	.00	.00	14.52
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/ 4		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.63	11.05	9.23	.60	.00	.00	.00	23.51
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.87	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.26	8.03	8.36	.50	.00	.00	.00	19.14
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.08	4.92	8.49	4.82	.00	.00	.00	.00	.00	19.31
AV. PAN FACTOR	.00	.00	.00	.38	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.66	3.57	9.98	9.70	5.30	.22	.00	.00	29.43
AV. PAN FACTOR	.00	.00	.00	.00	.34	.40	.78	92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.66	4.40	11.42	5.49	.00	.00	.00	.00	21.97
AV. PAN FACTOR	.00	.00	.00	.00	.34	.48	.89	.90	.00	.00	.00	.00	

RUCIFER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.08	4.72	6.79	.00	.00	.00	.00	.00	.00	12.58
AV. PAN FACTOR	.00	.00	.00	.38	.66	.82	.00	.00	.00	.00	.00	.00	

UCUMBER	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.19	6.38	7.92	5.03	.55	.00	.00	22.07
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.75	.65	.00	.00	

RY ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.17	5.50	8.11	10.68	7.60	.56	.00	.00	.00	33.62
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

REEN ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.07	3.98	6.64	.00	.00	.00	.00	.00	.00	11.68
AV. PAN FACTOR	.00	.00	.00	.38	.57	.80	.00	.00	.00	.00	.00	.00	

EAS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.20	6.30	9.27	2.21	.00	.00	.00	.00	.00	18.99
AV. PAN FACTOR	.00	.00	.00	.41	.85	.95	.90	.00	.00	.00	.00	.00	

OTATO	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.66	3.78	10.95	9.69	4.38	.00	.00	.00	29.46
AV. PAN FACTOR	.00	.00	.00	.00	.34	.42	.86	.92	.74	.00	.00	.00	

ODESSA

RADISH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.77	4.82	.00	.00	.00	.00	.00	.00	.00	6.58
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.08	4.76	8.93	10.31	.98	.00	.00	.00	.00	26.07
AV. PAN FACTOR	.00	.00	.00	.38	.67	.92	.81	.31	.00	.00	.00	.00	

SORGHUM — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.26	8.14	9.27	5.44	.41	.00	.00	25.50
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.88	.81	.54	.00	.00	

SOYBEANS — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.66	4.10	10.59	9.27	5.14	.15	.00	.00	29.91
AV. PAN FACTOR	.00	.00	.00	.00	.34	.45	.83	.88	.77	.43	.00	.00	

SPINACH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.08	5.07	1.46	.00	.00	.00	.00	.00	.00	7.61
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.26	2.93	6.86	8.94	6.93	.00	.00	.00	.00	.00	25.91
AV. PAN FACTOR	.00	.00	.47	.63	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.07	3.33	8.03	11.76	9.65	5.70	.23	.00	.00	39.75
AV. PAN FACTOR	.00	.00	.00	.38	.49	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.07	4.13	8.84	11.22	2.32	.00	.00	.00	.00	27.58
AV. PAN FACTOR	.00	.00	.00	.38	.59	.91	.88	.47	.00	.00	.00	.00	

TOMATO — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
			.00	.00	.66	3.21	8.81	9.27	5.22	.25	.00	.00	27.42
			.00	.00	.34	.36	.70	.88	.78	.43	.00	.00	

END 10/31

MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
.57	4.23	6.87	8.21	3.24	.93	.36	.73	.00	.00	25.13
.67	.87	.92	.85	.39	.12	.12	.46	.83	.00	

END 10/31

MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
.00	.00	.00	2.19	6.38	7.90	1.83	.00	.00	.00	18.29
.00	.00	.00	.31	.51	.76	.65	.00	.00	.00	

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	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.6	41.6	43.4	47.9	52.9	56.7	59.6	59.5	56.7	50.6	44.0	40.6	
TOTAL PRECIPITATION (IN)	4.23	2.93	2.38	1.91	1.45	1.34	.96	1.20	1.75	2.91	3.85	4.53	29.44
EFFECTIVE PRECIP (IN)	.19	.65	1.20	1.27	1.04	.97	.71	.86	1.19	1.26	.36	.08	9.78

ALFALFA	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.96	2.76	3.69	2.61	1.29	.00	.00	.00	11.32
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.26	3.42	4.47	3.23	1.73	.09	.00	.00	14.20
AV. PAN FACTOR	.80	.80	.80	.80	80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	3.20	4.21	3.02	1.58	.03	.00	.00	13.20
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.86	3.86	5.51	4.04	2.16	.00	.00	.00	16.43
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.40	2.54	3.95	2.82	1.29	.00	.00	.00	11.00
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.10	3.44	2.41	1.00	.00	.00	.00	7.94
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.06	4.29	5.51	3.84	1.29	.00	.00	.00	17.99
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.52	1.22	.84	.77	.00				
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32				

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.94	2.10	1.58	.00	.00	.00	4.62
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.59	3.53	1.07	.00	.00	.00	.00	.00	7.19
AV. PAN FACTOR	.00	.00	.00	.46	.74	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.46	2.55	3.40	2.02	.00	.00	.00	8.43
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.46	3.31	3.63	.39	.00	.00	.00	7.80
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.44	1.92	.00	.00	.00	.00	.00	.00	4.37
AV. PAN FACTOR	.00	.00	.00	.46	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.94	1.60	1.40	.00	.00	.00	3.94
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.54	3.20	4.16	2.02	.00	.00	.00	.00	11.93
AV. PAN FACTOR	.00	.00	.00	.48	.73	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.10	1.89	.00	.00	.00	.00	.00	.00	3.98
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.26	3.60	.00	.00	.00	.00	.00	.00	6.86
AV. PAN FACTOR	.00	.00	.00	.50	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.46	2.83	3.60	1.94	.00	.00	.00	8.83
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.55	.87	.86	.66	.00	.00	

RADISH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.00	.00	.00	.00	.00	.00	00	.00	2.00
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.48	.00	.00	.00	.00	.00	.00	.00	2.48
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.08	1.66	3.25	2.56	.11	.00	.00	.00	.00	.00	7 67
AV. PAN FACTOR	.00	.67	.72	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.46	2.22	3.05	1.87	.00	.00	.00	7.60
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.45	.77	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.45	1.68	3.09	.79	.00	.00	.00	.00	.00	.00	6.01
AV. PAN FACTOR	.00	1.04	.92	.88	.85	.42	.12	.12	.12	.55	.82	1.32	

SQUASH	BEG 7/ 9		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.94	1.60	1.40	.00	.00	.00	3.94
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.65	.00	.00	

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	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	37.2	40.8	42.7	47.3	53.1	58.4	63.0	62.5	58.1	50.1	42.6	39.0	
TOTAL PRECIPITATION (IN)	8.50	5.77	4.85	3.13	1.85	1.44	.76	1.34	2.36	4.68	7.58	8.70	50.96
EFFECTIVE PRECIP (IN)	.05	.64	1.42	2.01	1.32	1.06	.61	.99	1.63	1.47	36	.02	11.58

ALFALFA BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.20	3.14	4.63	3.30	1.26	.00	.00	.00	13.52
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.62	3.88	5.55	4.05	1.77	.02	.00	.00	16.90
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.48	3.64	5.24	3.80	1.60	.00	.00	.00	15.75
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.19	4.38	6.78	5.06	2.27	.00	.00	.00	19.69
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.46	2.90	4.93	3.55	1.26	.00	.00	.00	13.09
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.75	4.32	3.04	.92	.00	.00	.00	10.03
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.26	4.87	6.78	4.81	1.26	.00	.00	.00	20.98
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.42	1.41	1.24	1.03	.00	.00	.00	.00	4.10
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

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GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.39	3.32	.75	.00	.00	.00	6.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.39	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	3.00	3.89	.80	.00	.00	.00	.00	.00	7.70
AV. PAN FACTOR	.00	.00	.54	.57	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.70	3.83	4.47	2.04	.00	.00	.00	11.04
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.58	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.76	4.93	4.50	.07	.00	.00	.00	10.27
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.82	1.75	.00	.00	.00	.00	.00	.00	4.56
AV. PAN FACTOR	.00	.00	.54	.56	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.23	2.60	1.43	.00	.00	.00	6.34
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	2.78	3.64	5.13	2.22	.00	.00	.00	.00	13.86
AV. PAN FACTOR	.00	.00	.54	.59	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.50	1.74	.00	.00	.00	.00	.00	.00	4.24
AV. PAN FACTOR	.00	.00	.54	.54	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.21	3.63	3.56	.00	.00	.00	.00	.00	.00	7.39
AV. PAN FACTOR	.00	.00	.54	.62	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.70	4.37	4.56	1.86	.00	.00	.00	11.49
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.65	.88	.82	.62	.00	.00	

RADISH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.19	.09	.00	.00	.00	.00	.00	.00	.00	.28
AV. PAN FACTOR	.00	.00	.54	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.91	.00	.00	.00	.00	.00	.00	.00	1.94
AV. PAN FACTOR	.00	.00	.54	.57	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.12	3.47	2.92	.20	.00	.00	.00	.00	.00	7.71
AV. PAN FACTOR	.00	.67	.72	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.70	3.27	4.10	1.92	.00	.00	.00	9.99
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.25	1.14	3.29	.95	.16	.00	.00	.00	.00	.00	5.79
AV. PAN FACTOR	.00	1.04	.92	.88	.85	.42	.12	.12	.12	.53	.81	2.15	

SQUASH BEG 6/29 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.23	2.68	1.39	.00	.00	.00	6.30
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.71	.60	.00	.00	

OMAK 48.43 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	23.0	30.4	38.6	48.3	56.9	64.2	70 4	68.8	60.1	47.3	34.6	26.8	
TOTAL PRECIPITATION (IN)	1.39	1.14	.89	.92	1.03	.90	.52	.68	59	.82	1.38	1.77	12.03
EFFECTIVE PRECIP (IN)	.00	.03	.55	.65	.78	.74	.48	55	.42	.51	.01	.00	4.71

ALFALFA — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.18	6.07	7.24	5.22	3.39	.29	.00	.00	25.39
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.60	6.79	8.06	5.82	3.79	.35	.00	.00	28.40
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.39	6.43	7.65	5.52	3.59	.32	.00	.00	26.89
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.76	7.50	9.68	7.03	4.39	.29	.00	.00	31.67
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER — BEG 4/11 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	3.70	6.79	8.87	6.43	3.99	.23	.00	.00	30.45
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER — BEG 4/28 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	3.98	7.50	9.68	7.03	4.39	.29	.00	.00	32.90
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER — BEG 4/18 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.27	3.70	6.79	8.87	6.43	3.99	.23	.00	.00	30.28
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER — BEG 5/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.22	6.79	8.87	6.43	3.99	.23	.00	.00	29.53
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.73	5.35	7.65	5.52	3.39	.14	.00	.00	23.78
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/11	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.34	2.30	4.63	6.84	4.91	2.39	.11	.00	.00	21.52
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/28	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	2.58	5.35	7.65	5.52	3.39	.14	.00	.00	24.65
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/18	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.21	2.30	4.63	6.84	4.91	2.39	.11	.00	.00	21.39
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.92	4.63	6.84	4.91	2.39	.11	.00	.00	20.80
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.34	4.28	6.43	4.91	2.99	.14	.00	.00	19.09
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.31	5.35	7.24	8.55	.00	.00	.00	.00	22.46
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.31	3.56	8.46	6.73	4.39	.38	.00	.00	24.83
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.19	5.09	7.86	9.27	6.43	2.99	.03	.00	.00	31.87
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.19	1.46	2.84	1.96	1.88	1.19	.00	.00	.00	9.51
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.33	7.44	6.57	.87	.00	.00	.00	16.21
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.78	.94	.49	.00	.00	.00	

GREEN BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	00	.00	.00	.00	.00	1.27	5.15	5 52	1.00	.00	.00	.00	12.93
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.55	.80	.78	.00	.00	.00	

CARROTS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	2.80	6.95	7.09	.00	.00	.00	.00	.00	17.15
AV. PAN FACTOR	.00	.00	.00	.40	.51	.86	.80	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.33	2.73	7.05	6.43	3.74	.14	.00	.00	20.40
AV. PAN FACTOR	.00	.00	.00	.00	.35	.39	.74	.92	.83	.56	.00	.00	

SWEET CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.33	3.24	8.34	4.37	.00	.00	.00	.00	16.28
AV. PAN FACTOR	.00	.00	.00	.00	.35	.44	.87	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	2.73	6.60	1.95	.00	.00	.00	.00	.00	11.60
AV. PAN FACTOR	.00	.00	.00	.40	.50	.82	.71	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.27	4.09	5.06	3.39	.23	.00	.00	14.03
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.45	.74	.76	.67	.00	.00	

DRY ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	3.35	6.79	8.06	5.50	1.60	.00	.00	.00	25.60
AV. PAN FACTOR	.00	.00	.00	.40	.59	.84	.84	.80	.68	.00	.00	.00	

GREEN ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	2.39	6.03	1.93	.00	.00	.00	.00	.00	10.66
AV. PAN FACTOR	.00	.00	.00	.40	.45	.76	.71	.00	.00	.00	.00	.00	

PEAS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	3.71	7.86	5.46	.00	.00	.00	.00	.00	17.34
AV. PAN FACTOR	.00	.00	.00	.40	.64	.96	.93	.00	.00	.00	.00	.00	

POTATO	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.33	2.83	7.86	6.43	3.44	.02	.00	.00	20.91
AV. PAN FACTOR	.00	.00	.00	.00	.35	.40	.82	.92	.77	.61	.00	.00	

RADISH — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.36	3.82	.00	.00	.00	.00	.00	.00	.00	4.18
AV. PAN FACTOR	.00	.00	.00	.43	.66	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	2.74	7.07	8.85	2.36	.00	.00	.00	.00	21.32
AV. PAN FACTOR	.00	.00	.00	.40	.50	.87	.92	.51	.00	.00	.00	.00	

SORGHUM — BEG 6/10 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.27	5.15	6.08	3.78	.13	.00	.00	16.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.55	.87	.84	.54	.00	.00	

SOYBEANS — BEG 5/23 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.33	3.07	7.66	6.13	3.64	.08	.00	.00	20.90
AV. PAN FACTOR	.00	.00	.00	.00	.35	.43	.80	.88	.81	.47	.00	.00	

SPINACH — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	3.00	3.91	.00	.00	.00	.00	.00	.00	7.22
AV. PAN FACTOR	.00	.00	.00	.40	.54	.79	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.83	4.41	7.50	8.53	1.73	.00	.00	.00	.00	23.00
AV. PAN FACTOR	.00	.00	.00	.40	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.31	2.16	5.52	8.84	6.43	3.99	.33	.00	.00	27.57
AV. PAN FACTOR	.00	.00	.00	.40	.42	.70	.92	.92	.88	.82	.00	.00	

SUNFLOWER — BEG 4/19 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	2.43	6.70	8.87	3.73	.00	.00	.00	.00	22.03
AV. PAN FACTOR	.00	.00	.00	.40	.46	.83	.92	.63	.00	.00	.00	.00	

TOMATO — BEG 5/23 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.33	2.52	6.12	6.12	3.61	.05	.00	.00	18.75
AV. PAN FACTOR	.00	.00	.00	.00	.35	.36	.65	.88	.80	.44	.00	.00	

WINTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.74	5.55	7.50	6.82	.51	.01	.31	.00	.00	22.45
AV. PAN FACTOR	.00	.00	.00	.62	.91	.92	.72	.28	.12	.50	2.18	.00	

SQUASH — BEG 6/10 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.27	4.09	5.06	1.84	.00	.00	.00	12.26
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.45	.74	.70	.00	.00	.00	

OTHELLO 46.80 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	28.5	36.1	42.2	49.7	58.1	65.4	71.6	69.9	62.4	50.7	38.1	31.7	
TOTAL PRECIPITATION (IN)	1.12	.79	.60	.51	.65	.57	.22	.33	.34	.54	.98	1.15	7.80
EFFECTIVE PRECIP (IN)	.00	.16	.39	.37	.54	.53	.22	.32	.28	.35	.12	.00	3.29

ALFALFA BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.61	7.42	9.82	8.08	5.38	1.89	.00	.00	38.20
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.27	8.25	10.88	8.96	5.97	2.15	.00	.00	42.48
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 4/30 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.94	7.83	10.35	8.52	5.67	2.02	.00	.00	40.34
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	5.23	9.09	12.99	10.73	6.86	1.89	.00	.00	46.94
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/29 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.63	4.89	8.25	11.93	9.85	6.27	1.64	.00	.00	44.47
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/15 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.70	5.23	9.09	12.99	10.73	6.86	1.89	.00	.00	47.49
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/ 6 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	4.89	8.25	11.93	9.85	6.27	1.64	.00	.00	43.97
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/18 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.55	4.89	8.25	11.93	9.85	6.27	1.64	.00	.00	43.37
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 4/26 END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	3.53	6.58	10.35	8.52	5.38	1.25	.00	.00	35.73
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 3/29	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.40	3.19	5.74	9.29	7.64	3.89	1.13	.00	.00	32.29
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/15	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.59	3.53	6.58	10.35	8.52	5.38	1.25	.00	.00	36.20
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.97	3.19	5.74	9.29	7.64	3.89	1.13	.00	.00	31.85
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/18	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.47	3.19	5.74	9.29	7.64	3.89	1.13	.00	.00	31.34
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	5.32	8.76	7.64	4.78	1.25	.00	.00	28.61
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.66	6.58	9.82	12.94	.00	.00	.00	.00	32.00
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.66	4.49	11.40	10.29	6.86	2.28	.00	.00	37.98
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.97	6.58	9.51	12.46	9.85	4.78	.74	.00	.00	44.89
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.97	2.17	3.65	2.95	3.22	2.10	.49	.00	.00	15.55
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.67	11.21	9.37	.67	.00	.00	.00	23.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.87	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.29	8.17	8.49	.54	.00	.00	.00	19.48
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.63	.80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.22	5.24	8.64	4.90	.00	.00	.00	.00	.00	20.01
AV. PAN FACTOR	.00	.00	.00	.38	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	3.60	10.13	9.85	5.60	.26	.00	.00	30.22
AV. PAN FACTOR	.00	.00	.00	.00	.33	.40	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	4.45	11.59	5.57	.00	.00	.00	.00	22.39
AV. PAN FACTOR	.00	.00	.00	.00	.33	.48	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.22	5.04	6.91	.00	.00	.00	.00	.00	.00	13.17
AV. PAN FACTOR	.00	.00	.00	.38	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.22	6.50	8.04	5.33	.65	.00	.00	22.73
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.32	5.85	8.25	10.85	7.72	.60	.00	.00	.00	34.59
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.21	4.27	6.75	.00	.00	.00	.00	.00	.00	12.23
AV. PAN FACTOR	.00	.00	.00	.38	.57	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.35	6.68	9.43	2.25	.00	.00	.00	.00	.00	19.70
AV. PAN FACTOR	.00	.00	.00	.41	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	3.82	11.11	9.83	4.68	.00	.00	.00	30.21
AV. PAN FACTOR	.00	.00	.00	.00	.33	.42	.86	.92	.74	.00	.00	.00	

RADISH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.94	5.15	.00	.00	.00	.00	.00	.00	.00	7.10
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.22	5.08	9.09	10.47	1.01	.00	.00	.00	.00	26.87
AV. PAN FACTOR	.00	.00	.00	.38	.66	.92	.81	.31	.00	.00	.00	.00	

SORGHUM — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.29	8.28	9.41	5.74	.49	.00	.00	26.20
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.88	.81	.54	.00	.00	

SOYBEANS — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	4.15	10.75	9.41	5.43	.19	.00	.00	30.70
AV. PAN FACTOR	.00	.00	.00	.00	.33	.45	.83	.88	.77	.43	.00	.00	

SPINACH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.23	5.40	1.49	.00	.00	.00	.00	.00	.00	8.12
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.43	3.10	7.25	9.09	7.07	.00	.00	.00	.00	.00	26.94
AV. PAN FACTOR	.00	.00	.46	.63	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.21	3.59	8.16	11.93	9.79	6.01	.26	.00	.00	40.96
AV. PAN FACTOR	.00	.00	.00	.38	.49	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.21	4.43	8.99	11.39	2.36	.00	.00	.00	.00	28.38
AV. PAN FACTOR	.00	.00	.00	.38	.59	.91	.88	.47	.00	.00	.00	.00	

TOMATO — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	3.24	8.95	9.41	5.52	.33	.00	.00	28.21
AV. PAN FACTOR	.00	.00	.00	.00	.33	.36	.69	.88	.78	.43	.00	.00	

WINTER WHEAT — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.75	4.47	7.26	8.35	3.32	1.00	.55	.90	.00	.00	26.60
AV. PAN FACTOR	.00	.00	.66	.87	.92	.85	.39	.12	.12	.45	.78	.00	

SQUASH — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.22	6.50	8.03	1.96	.00	.00	.00	18.70
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.65	.00	.00	.00	

POMEROY 46.47 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	32.0	38.2	41.9	49.0	56.4	63.7	70.9	69.4	62.1	51.5	40.1	34.8	
TOTAL PRECIPITATION (IN)	2.14	1.36	1.45	1.18	1.27	1.07	.42	.76	.73	1.18	1.71	2.23	15.50
EFFECTIVE PRECIP (IN)	.00	.35	.91	.83	.95	.87	.41	.67	.55	.76	.26	.00	6.57

ALFALFA BEG 5/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.43	5.87	8.94	6.94	4.40	.67	.00	.00	30.26
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.90	6.58	9.93	7.74	4.92	.83	.00	.00	33.91
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/ 4 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.67	6.22	9.44	7.34	4.66	.75	.00	.00	32.09
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/29 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.85	7.29	11.90	9.34	5.71	.67	.00	.00	38.76
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/29 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.84	3.56	6.58	10.91	8.54	5.18	.52	.00	.00	36.14
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/17 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.20	3.85	7.29	11.90	9.34	5.71	.67	.00	.00	38.96
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/ 7 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.36	3.56	6.58	10.91	8.54	5.18	.52	.00	.00	35.66
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/20 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	3.56	6.58	10.91	8.54	5.18	.52	.00	.00	35.45
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 4/29 END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.44	5.16	9.44	7.34	4.40	.28	.00	.00	29.05
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 3/29		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.65	2.15	4.45	8.45	6.54	3.10	.20	.00	.00	25.54
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/17		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.44	5.16	9.44	7.34	4.40	.28	.00	.00	29.17
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 7		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	2.15	4.45	8.45	6.54	3.10	.20	.00	.00	25.11
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/20		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	2.15	4.45	8.45	6.54	3.10	.20	.00	.00	24.98
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/23		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.29	4.09	7.96	6.54	3.88	.28	.00	.00	23.04
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.30	5.16	8.94	11.35	.00	.00	.00	.00	26.75
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.30	3.39	10.42	8.94	5.71	.91	.00	.00	30.67
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	4.98	7.64	11.41	8.54	3.88	.00	.00	.00	36.70
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	1.31	2.68	2.54	2.53	1.53	.00	.00	.00	10.85
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/11		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.12	8.97	8.80	1.30	.00	.00	.00	20.18
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.76	.95	.51	.00	.00	.00	

GREEN BEANS	BEG 6/11	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.09	6.23	7.34	1.45	.00	.00	.00	16.11
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.54	.80	.78	.00	.00	.00	

CARROTS	BEG 4/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.59	4.11	6.87	3 84	.00	.00	.00	.00	.00	15.40
AV. PAN FACTOR	.00	.00	.00	.40	.72	.87	.72	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/23	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.27	2.56	8.71	8.54	4.87	.14	.00	.00	25.09
AV. PAN FACTOR	.00	.00	.00	.00	.35	.39	.74	.92	.83	.56	.00	.00	

SWEET CORN	BEG 5/23	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.27	3.06	10.28	5.87	.00	.00	.00	.00	19.49
AV. PAN FACTOR	.00	.00	.00	.00	.35	.44	.87	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.58	3.93	4.93	.00	.00	.00	.00	.00	.00	9.43
AV. PAN FACTOR	.00	.00	.00	.40	.69	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/11	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.09	5.01	6.70	4.40	.47	.00	.00	17.66
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.44	.74	.76	.68	.00	.00	

DRY ONION	BEG 4/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.69	4.52	6.58	9.88	6.56	.23	.00	.00	.00	28.47
AV. PAN FACTOR	.00	.00	.00	.43	.78	.84	.84	.72	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.55	3.32	4.82	.00	.00	.00	.00	.00	.00	8.69
AV. PAN FACTOR	.00	.00	.00	.40	.60	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.73	5.25	7.55	1.36	.00	.00	.00	.00	.00	14.88
AV. PAN FACTOR	.00	.00	.00	.44	.88	.95	.89	.00	.00	.00	.00	.00	

POTATO	BEG 5/23	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.27	2.66	9.70	8.54	4.47	.02	.00	.00	25.66
AV. PAN FACTOR	.00	.00	.00	.00	.35	.40	.82	.92	.77	.61	.00	.00	

RADISH — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.21	3.78	.00	.00	.00	.00	.00	.00	.00	4.99
AV. PAN FACTOR	.00	.00	.00	.57	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.58	4.01	7.29	9.17	.53	.00	.00	.00	.00	21.58
AV. PAN FACTOR	.00	.00	.00	.40	.70	.92	.78	.28	.00	.00	.00	.00	

SORGHUM — BEG 6/11 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.09	6.24	8.05	5.03	.30	.00	.00	20.70
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.54	.87	.86	.59	.00	.00	

SOYBEANS — BEG 5/23 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.27	2.90	9.45	8.14	4.74	.05	.00	.00	25.56
AV. PAN FACTOR	.00	.00	.00	.00	.35	.42	.80	.88	.81	.47	.00	.00	

SPINACH — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.59	4.17	.58	.00	.00	.00	.00	.00	.00	5.34
AV. PAN FACTOR	.00	.00	.00	.41	.73	.61	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.68	5.54	7.10	3.81	.00	.00	.00	.00	.00	19.14
AV. PAN FACTOR	.00	.00	.49	.76	.92	.90	.45	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.55	2.74	6.67	10.91	8.47	4.94	.07	.00	.00	34.36
AV. PAN FACTOR	.00	.00	.00	.40	.52	.85	.92	.91	.84	.90	.00	.00	

SUNFLOWER — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.55	3.48	7.25	10.18	1.56	.00	.00	.00	.00	23.03
AV. PAN FACTOR	.00	.00	.00	.40	.63	.92	.86	.45	.00	.00	.00	.00	

TOMATO — BEG 5/23 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.27	2.35	7.58	8.13	4.79	.07	.00	.00	23.19
AV. PAN FACTOR	.00	.00	.00	.00	.35	.36	.65	.88	.82	.47	.00	.00	

WINTER WHEAT — BEG 3/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.25	3.39	5.54	5.73	1.38	.44	.05	.13	.00	.00	16.92
AV. PAN FACTOR	.00	.00	.74	.91	.92	.74	.30	.12	.12	.47	.88	.00	

SQUASH — BEG 6/11 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.09	5.01	6.70	2.56	.00	.00	.00	15.35
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.44	.74	.70	.00	.00	.00	

PORT ANGLES 48.12 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	39.0	41.8	43.1	47.3	52.4	56.5	59.8	59.7	57.3	50.6	44.0	40.9	
TOTAL PRECIPITATION (IN)	4.39	2.74	2.12	1.32	.89	.86	.49	.85	1.96	2.44	3.77	4.25	25.38
EFFECTIVE PRECIP (IN)	.22	.67	1.13	.88	.63	.62	.39	.60	.86	1.18	.37	.11	7.66

ALFALFA	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.22	3.07	4.02	2.87	1.65	.00	.00	.00	12.83
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.51	3.73	4.79	3.49	2.10	.18	.00	.00	15.80
AV. PAN FACTOR	.80	.00	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.41	3.51	4.53	3.28	1.95	.12	.00	.00	14.81
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.15	4.16	5.83	4.31	2.54	.05	.00	.00	18.03
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.70	2.86	4.27	3.08	1.65	.00	.00	.00	12.57
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.38	3.76	2.67	1.36	.00	.00	.00	9.16
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.39	4.59	5.83	4.10	1.65	.00	.00	.00	19.56
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.90	1.55	1.17	1.03	.32	.00	.00	.00	4.98
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.26	2.36	1.95	.00	.00	.00	5.57
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.18	2.94	3.83	1.22	.00	.00	.00	.00	.00	8.17
AV. PAN FACTOR	.00	.00	.00	.46	.75	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.76	2.88	3.66	2.39	.00	.00	.00	9.69
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.76	3.63	3.90	.56	.00	.00	.00	8.84
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.17	2.79	2.21	.00	.00	.00	.00	.00	.00	5.18
AV. PAN FACTOR	.00	.00	.00	.46	.72	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.25	1.86	1.76	.05	.00	.00	4.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	2.89	3.51	4.48	2.35	.00	.00	.00	.00	13.49
AV. PAN FACTOR	.00	.00	.00	.49	.74	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.45	2.18	.00	.00	.00	.00	.00	.00	4.76
AV. PAN FACTOR	.00	.00	.00	.45	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	3.59	4.03	.00	.00	.00	.00	.00	.00	7.94
AV. PAN FACTOR	.00	.00	.00	.51	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.76	3.15	3.86	2.32	.00	.00	.00	10.09
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.55	.87	.86	.66	.00	.00	

RADISH	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.53	2.35	.00	.00	.00	.00	.00	.00	.00	2.88
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.19	2.83	.00	.00	.00	.00	.00	.00	.00	3.02
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.13	1.98	3.58	2.88	.19	.00	.00	.00	.00	.00	8.75
AV. PAN FACTOR	.00	.66	.71	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.76	2.54	3.31	2.25	.00	.00	.00	8.86
AV. PAN FACTOR	.00	.00	.00	.00	.00	.38	.45	.77	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.50	2.00	3.42	1.17	.29	.00	.00	.00	.00	.00	7.37
AV. PAN FACTOR	.00	1.02	.92	.88	.85	.42	.12	.12	.12	.55	.81	1.20	

SQUASH	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.25	1.86	1.76	.00	.00	.00	4.88
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.65	.00	.00	

PRIEST RAPIDS # 46.65 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	31.2	38.7	47.0	54.0	62.1	70.1	77.1	76.4	67.6	54.0	41.7	33.6	
TOTAL PRECIPITATION (IN)	.83	.87	.61	.33	38	.35	10	55	.54	.45	1.19	1.11	7 31
EFFECTIVE PRECIP (IN)	.00	.21	.41	.26	34	.34	.10	54	.46	.30	.37	.00	3 33

ALFALFA	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6 44	8.32	10.09	8 86	5.85	2.28	.00	.00	42.62
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	7.16	9.23	12.03	9.35	6.52	2.56	.00	.00	47.34
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.80	8.77	11.46	9.35	6.18	2.42	.00	.00	44.98
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 4/26		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.19	5.95	10.14	14.34	11.82	7.51	2.28	.00	.00	52.24
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 3/29		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.02	2.00	5.58	9.23	13.19	10.84	6.85	1.99	.00	.00	49.69
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 4/15		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.90	5.95	10.14	14.34	11.82	7.51	2.28	.00	.00	52.95
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.48	5.58	9.23	13.19	10.84	6.85	1.99	.00	.00	49.15
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 4/18		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.71	5.58	9.23	13.19	10.84	6.85	1.99	.00	.00	48.38
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 4/26		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.17	4.10	7.41	11.46	9.35	5.85	1.56	.00	.00	39.89
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PRIEST RAPIDS*

APRICOT W/O COVER	BEG 3/29	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.02	1.75	3.73	6.49	10.30	8.36	4.19	1.42	.00	.00	36.26
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/15	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.78	4.10	7.41	11.46	9.35	5.85	1.56	.00	.00	40.51
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.29	3.73	6.49	10.30	8.36	4.19	1.42	.00	.00	35.78
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/18	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.61	3.73	6.49	10.30	8.36	4.19	1.42	.00	.00	35.11
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.05	6.04	9.72	8.36	5.19	1.56	.00	.00	31.92
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.22	7.41	10.88	14.30	.00	.00	.00	.00	35.80
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.22	5.13	12.61	11.33	7.51	2.71	.00	.00	42.50
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.29	7.43	10.60	13.77	10.84	5.19	.98	.00	.00	50.09
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.29	2.62	4.21	3.37	3.42	2.20	.70	.00	.00	17.80
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.06	12.38	10.30	.71	.00	.00	.00	26.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.86	.88	.36	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	00	.00	2 64	9.03	9.31	.58	.00	.00	.00	21.57
AV. PAN FACTOR	.00	.00	.00	.00	00	.31	.63	.80	77	.00	.00	00	

CARROTS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.50	5.92	9.65	5.43	.00	.00	.00	.00	.00	22.51
AV. PAN FACTOR	.00	.00	.00	.37	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.93	4.07	11.19	10.84	6.11	.33	.00	.00	33.46
AV. PAN FACTOR	.00	.00	.00	.00	.32	.39	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.93	5.01	12.81	6.13	00	.00	.00	.00	24.88
AV. PAN FACTOR	.00	.00	.00	.00	.32	.47	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.50	5.70	7.76	.00	.00	.00	.00	.00	.00	14.96
AV. PAN FACTOR	.00	.00	.00	.36	.65	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.56	7.18	8.82	5.80	.79	.00	.00	25.15
AV. PAN FACTOR	.00	.00	.00	.00	.00	.30	.50	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.61	6.61	9.23	12.00	8.46	.65	.00	.00	.00	38.56
AV. PAN FACTOR	.00	.00	.00	.39	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.49	4.84	7.59	.00	.00	.00	.00	.00	.00	13.92
AV. PAN FACTOR	.00	.00	.00	.36	.56	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.65	7.51	10.51	2.49	.00	.00	.00	.00	.00	22.16
AV. PAN FACTOR	.00	.00	.00	.40	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.93	4.31	12.28	10.82	5.07	.00	.00	.00	33.42
AV. PAN FACTOR	.00	.00	.00	.00	.32	.41	.86	.92	.74	.00	.00	.00	

PRIEST RAPIDS*

RADISH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.35	5.88	.00	00	.00	.00	.00	.00	.00	8.23
AV. PAN FACTOR	.00	.00	.00	.54	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.50	5.74	10.14	11.60	1.07	.00	00	.00	00	30.04
AV. PAN FACTOR	.00	.00	.00	.36	.66	.92	.81	.31	.00	.00	.00	.00	

SORGHUM — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.64	9.14	10.34	6.26	.62	.00	.00	29.00
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.64	.86	.81	.54	.00	.00	

SOYBEANS — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.93	4.68	11.89	10.34	5.92	.25	.00	.00	34.00
AV. PAN FACTOR	.00	.00	.00	.00	.32	.44	.83	.86	.77	.43	.00	.00	

SPINACH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.51	6.12	1.68	.00	.00	.00	.00	.00	.00	9.30
AV. PAN FACTOR	.00	.00	.00	.37	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.54	3.55	8.16	10.14	7.88	.00	.00	.00	.00	.00	30.27
AV. PAN FACTOR	.00	.00	.44	.61	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.49	4.07	9.10	13.19	10.77	6.56	.31	.00	.00	45.50
AV. PAN FACTOR	.00	.00	.00	.36	.48	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.49	5.01	10.03	12.59	2.56	.00	.00	.00	.00	31.68
AV. PAN FACTOR	.00	.00	.00	.36	.58	.91	.88	.47	.00	.00	.00	.00	

TOMATO — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.93	3.67	9.89	10.34	6.01	.43	.00	.00	31.26
AV. PAN FACTOR	.00	.00	.00	.00	.32	.35	.69	.88	.78	.43	.00	.00	

WINTER WHEAT — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.90	5.15	8.17	9.33	3.73	.93	.46	1.11	.00	.00	29.78
AV. PAN FACTOR	.00	.00	.61	.86	.92	.85	.39	.12	.12	.43	.69	.00	

SQUASH — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.56	7.18	8.80	2.12	.00	.00	.00	20.66
AV. PAN FACTOR	.00	.00	.00	.00	.00	.30	.50	.76	.65	.00	.00	.00	

PROSSER 46.25 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	30.6	37.7	43.2	50.3	58.1	64.9	70.3	68.8	62.0	51.3	39.7	33.5	
TOTAL PRECIPITATION (IN)	1.05	.63	.50	.60	.68	.54	.24	.33	.36	.64	.98	1.15	7.70
EFFECTIVE PRECIP (IN)	.00	.22	.32	.43	.56	.49	.24	.30	.28	.42	.14	.00	3.40

ALFALFA	BEG 4/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.71	5.56	6.88	8.80	7.18	4.65	1.53	.00	.00	35.30
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 4/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.80	6.21	7.66	9.75	7.97	5.17	1.75	.00	.00	39.29
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 4/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.75	5.88	7.27	9.27	7.57	4.91	1.64	.00	.00	37.30
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 4/20		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.41	4.92	8.43	11.65	9.54	5.95	1.53	.00	.00	42.42
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 3/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.13	1.53	4.60	7.66	10.70	8.75	5.43	1.31	.00	.00	40.10
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 4/ 9		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.91	4.92	8.43	11.65	9.54	5.95	1.53	.00	.00	42.92
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 3/31		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.32	4.60	7.66	10.70	8.75	5.43	1.31	.00	.00	39.76
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 4/12		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.77	4.60	7.66	10.70	8.75	5.43	1.31	.00	.00	39.21
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 4/20		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.34	3.31	6.11	9.27	7.57	4.65	.98	.00	.00	32.23
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PROSSER

APRICOT W/O COVER	BEG 3/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.10	1.31	2.99	5.33	8.32	6.78	3.35	.87	.00	.00	29.06
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/ 9	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.76	3.31	6.11	9.27	7.57	4.65	.98	.00	.00	32.65
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 3/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.11	2.99	5.33	8.32	6.78	3.35	.87	.00	.00	28.75
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/12	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.65	2.99	5.33	8.32	6.78	3.35	.87	.00	.00	28.29
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.36	4.94	7.85	6.78	4.13	.98	.00	.00	26.04
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.32	2.66	6.11	8.80	11.51	.00	.00	.00	.00	29.39
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.32	2.66	4.17	10.23	9.15	5.95	1.86	.00	.00	34.32
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.31	6.21	8.82	11.18	8.75	4.13	.54	.00	.00	40.93
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.31	2.02	3.39	2.62	2.85	1.79	.32	.00	.00	14.30
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.26	10.58	7.68	.22	.00	.00	.00	21.74
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.91	.81	.31	.00	.00	.00	

GREEN BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.65	7.91	7.24	.00	.00	.00	.00	17.80
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.69	.79	.00	.00	.00	.00	

CARROTS	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.20	5.80	7.81	2.33	.00	.00	.00	.00	.00	18.13
AV. PAN FACTOR	.00	.00	.46	.48	.79	.86	.69	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.25	4.15	9.99	8.75	4.00	.00	.00	.00	28.13
AV. PAN FACTOR	.00	.00	.00	.00	.34	.48	.86	.92	.69	.00	.00	.00	

SWEET CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.25	5.43	10.70	2.69	.00	.00	.00	.00	20.07
AV. PAN FACTOR	.00	.00	.00	.00	.34	.61	.92	.88	.00	.00	.00	.00	

CRUCIFER	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.18	5.55	4.62	.00	.00	.00	.00	.00	.00	12.35
AV. PAN FACTOR	.00	.00	.46	.48	.76	.81	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.47	6.46	7.18	4.54	.40	.00	.00	21.05
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.56	.76	.74	.64	.00	.00	

DRY ONION	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.38	6.01	7.66	9.61	6.01	.00	.00	.00	.00	31.67
AV. PAN FACTOR	.00	.00	.46	.52	.82	.84	.83	.71	.00	.00	.00	.00	

GREEN ONION	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.10	4.96	4.57	.00	.00	.00	.00	.00	.00	11.63
AV. PAN FACTOR	.00	.00	.46	.46	.69	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.48	6.91	8.28	.00	.00	.00	.00	.00	.00	17.67
AV. PAN FACTOR	.00	.00	.46	.53	.93	.94	.00	.00	.00	.00	.00	.00	

POTATO	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.25	4.60	10.57	8.55	2.65	.00	.00	.00	27.62
AV. PAN FACTOR	.00	.00	.00	.00	.34	.52	.91	.90	.70	.00	.00	.00	

RADISH BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.87	.75	.00	.00	.00	.00	.00	.00	.00	3.62
AV. PAN FACTOR	.00	.00	.46	.61	.66	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.19	5.78	8.43	7.88	.16	.00	.00	.00	.00	24.45
AV. PAN FACTOR	.00	.00	.46	.48	.79	.92	.68	.21	.00	.00	.00	.00	

SORGHUM BEG 5/31 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.65	8.14	8.36	4.73	.28	.00	.00	24.15
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.70	.88	.77	.51	.00	.00	

SOYBEANS BEG 5/11 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.25	4.90	10.12	8.36	3.77	.00	.00	.00	28.39
AV. PAN FACTOR	.00	.00	.00	.00	.34	.56	.87	.88	.66	.00	.00	.00	

SPINACH BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.22	5.25	.00	.00	.00	.00	.00	.00	.00	7.47
AV. PAN FACTOR	.00	.00	.46	.49	.76	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 3/ 4 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.73	3.62	6.85	8.23	3.80	.00	.00	.00	.00	.00	23.23
AV. PAN FACTOR	.00	.00	.46	.74	.92	.90	.45	.00	.00	.00	.00	.00	

SUGAR BEET BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.07	4.42	8.11	10.70	8.62	4.56	.00	.00	.00	38.47
AV. PAN FACTOR	.00	.00	.46	.46	.62	.89	.92	.91	.84	.00	.00	.00	

SUNFLOWER BEG 3/30 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.10	5.31	8.43	9.28	.89	.00	.00	.00	.00	26.01
AV. PAN FACTOR	.00	.00	.46	.46	.73	.92	.80	.38	.00	.00	.00	.00	

TOMATO BEG 5/11 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.25	3.58	9.08	8.36	4.06	.06	.00	.00	26.40
AV. PAN FACTOR	.00	.00	.00	.00	.34	.42	.78	.88	.67	.36	.00	.00	

WINTER WHEAT BEG 3/ 4 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	1.31	4.50	6.85	6.74	1.40	.85	.42	.78	.00	.00	22.85
AV. PAN FACTOR	.00	.00	.69	.91	.92	.74	.30	.12	.12	.45	.75	.00	

SQUASH BEG 5/31 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.47	6.46	7.06	1.22	.00	.00	.00	17.21
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.56	.75	.68	.00	.00	.00	

PULLMAN 46.77 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	28.2	34.3	38.0	45.1	52.6	59.1	65.9	65.5	58.8	48.9	37.1	31.7	
TOTAL PRECIPITATION (IN)	2.89	2.09	1.96	1.58	1.52	1.49	.53	.95	.99	1.61	2.64	3.07	21.32
EFFECTIVE PRECIP (IN)	.00	.29	1.09	1.10	1.12	1.13	.51	.79	.72	1.01	.17	.00	7.93

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.53	4.87	7.71	6.17	3.84	.08	.00	.00	24.19
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.76	5.50	8.57	6.90	4.32	.15	.00	.00	27.20
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.64	5.18	8.14	6.53	4.08	.11	.00	.00	25.70
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.37	6.13	10.30	8.36	5.04	.08	.00	.00	31.29
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.81	5.50	9.43	7.63	4.56	.02	.00	.00	29.96
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.23	6.13	10.30	8.36	5.04	.08	.00	.00	32.15
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.81	5.50	9.43	7.63	4.56	.02	.00	.00	29.96
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.79	5.50	9.43	7.63	4.56	.02	.00	.00	28.94
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.74	4.24	8.14	6.53	3.84	.00	.00	.00	23.49
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PULLMAN

T W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
HLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.58	3.61	7.27	5.80	2.64	.00	.00	.00	20.91
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	
W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
HLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.20	4.24	8.14	6.53	3.84	.00	.00	.00	23.95
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	
W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
HLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.58	3.61	7.27	5.80	2.64	.00	.00	.00	20.91
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	
PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.88	3.61	7.27	5.80	2.64	.00	.00	.00	20.20
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	
S	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.74	6.84	5.80	3.36	.00	.00	.00	18.74
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	
	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.45	4.24	7.71	10.20	.00	.00	.00	.00	22.59
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	
	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.45	2.66	9.00	8.00	5.04	.18	.00	.00	25.33
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	
ERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.04	6.45	9.87	7.63	3.36	.00	.00	.00	31.35
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	
BERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.85	2.03	2.09	2.14	1.20	.00	.00	.00	8.30
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	
EANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.31	5.64	8.00	2.54	.00	.00	.00	16.48
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.57	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.31	4.10	6.26	2.50	.00	.00	.00	13.18
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.43	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	1.76	5.35	8.47	.66	.00	.00	.00	.00	16.26
AV. PAN FACTOR	.00	.00	.00	.41	.47	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.11	6.05	7.55	4.58	.00	.00	.00	19.29
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.61	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.25	7.80	7.36	.00	.00	.00	.00	16.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	1.73	5.08	3.93	.00	.00	.00	.00	.00	10.75
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.31	3.55	5.38	3.84	.08	.00	.00	13.16
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.38	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	2.10	5.44	8.57	6.69	2.45	.00	.00	.00	25.26
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	1.54	4.50	3.93	.00	.00	.00	.00	.00	9.99
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	2.29	6.37	7.73	.00	.00	.00	.00	.00	16.40
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.11	6.97	7.63	4.38	.00	.00	.00	20.09
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.69	.92	.85	.65	.00	.00	

RADISH BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	2.70	.00	.00	.00	.00	.00	.00	.00	2.72
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	1.74	5.37	9.43	4.19	.00	.00	.00	.00	20.74
AV. PAN FACTOR	.00	.00	.00	.41	.47	.82	.92	.59	.00	.00	.00	.00	

SORGHUM BEG 6/21 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.31	4.11	6.68	4.56	.00	.00	.00	15.67
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.43	.82	.88	.66	.00	.00	

SOYBEANS BEG 6/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.22	7.03	7.27	4.48	.00	.00	.00	19.99
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	1.85	3.85	.00	.00	.00	.00	.00	.00	5.72
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	3.47	6.13	9.08	2.00	.00	.00	.00	.00	20.78
AV. PAN FACTOR	.00	.00	.00	.41	.75	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.01	1.44	3.91	9.24	7.63	4.62	.13	.00	.00	26.99
AV. PAN FACTOR	.00	.00	.00	.41	.42	.64	.90	.92	.89	.82	.00	.00	

SUNFLOWER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	1.56	4.94	9.43	5.80	.09	.00	.00	.00	21.84
AV. PAN FACTOR	.00	.00	.00	.41	.44	.77	.92	.72	.32	.00	.00	.00	

TOMATO BEG 6/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.09	5.12	7.02	4.47	.00	.00	.00	17.71
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.52	.85	.86	.51	.00	.00	

WINTER WHEAT BEG 4/ 2 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.92	4.45	6.13	7.25	.57	.00	.00	.00	.00	19.33
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.49	1.03	.00	

WASH BEG 6/21 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.31	3.55	5.38	3.33	.00	.00	.00	12.57
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.38	.67	.72	.00	.00	.00	

PUYALLUP 47.20 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.8	42.5	44.4	49.2	55.4	60.5	64.4	63.8	59.3	51.8	43.8	40.4	
TOTAL PRECIPITATION (IN)	6.23	4.51	3.81	2.82	1.82	1.63	.81	1.43	2.06	3.44	5.66	6.54	40.76
EFFECTIVE PRECIP (IN)	.12	.73	1.55	1.86	1.31	1.20	.65	1.06	1.43	1.57	.41	.07	11.95

ALFALFA BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.38	3.23	4.75	3.36	1.55	.00	.00	.00	14.27
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.83	4.01	5.71	4.14	2.08	.04	.00	.00	17.80
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.68	3.75	5.39	3.88	1.90	.00	.00	.00	16.60
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	4.53	6.98	5.18	2.60	.00	.00	.00	20.69
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.62	2.97	5.07	3.62	1.55	.00	.00	.00	13.83
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.75	4.44	3.10	1.20	.00	.00	.00	10.49
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.57	5.05	6.98	4.92	1.55	.00	.00	.00	22.08
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.55	1.40	1.26	1.02	.00	.00	.00	.00	4.23
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

PUYALLUP

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.40	3.37	1.13	.00	.00	.00	6.90
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.38	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.25	3.29	4.01	.82	.00	.00	.00	.00	.00	8.37
AV. PAN FACTOR	.00	.00	.52	.55	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.61	3.90	4.57	2.36	.00	.00	.00	11.45
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.57	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.67	5.06	4.61	.10	.00	.00	.00	10.44
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	3.09	1.78	.00	.00	.00	.00	.00	.00	5.10
AV. PAN FACTOR	.00	.00	.52	.55	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.24	2.71	1.73	.00	.00	.00	6.68
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	3.06	3.75	5.28	2.25	.00	.00	.00	.00	14.67
AV. PAN FACTOR	.00	.00	.52	.57	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.17	2.75	1.77	.00	.00	.00	.00	.00	.00	4.69
AV. PAN FACTOR	.00	.00	.52	.53	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.46	3.96	3.65	.00	.00	.00	.00	.00	.00	8.08
AV. PAN FACTOR	.00	.00	.52	.61	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.61	4.47	4.66	2.18	.00	.00	.00	11.91
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.64	.88	.82	.62	.00	.00	

RADISH — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.47	.11	.00	.00	.00	.00	.00	.00	.00	.58
AV. PAN FACTOR	.00	.00	.52	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.26	2.17	.00	.00	.00	.00	.00	.00	.00	2.43
AV. PAN FACTOR	.00	.00	.52	.56	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 2/14 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.48	3.80	2.99	.20	.00	.00	.00	.00	.00	8.47
AV. PAN FACTOR	.00	.64	.70	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.61	3.32	4.19	2.24	.00	.00	.00	10.35
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT — BEG 2/14 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	1.50	3.61	.91	.14	.00	.00	.00	.00	.00	6.40
AV. PAN FACTOR	.00	.98	.91	.88	.85	.42	.12	.12	.12	.52	.78	1.39	

SQUASH — BEG 6/29 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.24	2.71	1.69	.00	.00	.00	6.64
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.71	.60	.00	.00	

QUICENE 47.82 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	36.7	40.9	43.2	48.2	54.3	59.1	63.5	63.0	58.5	50.5	42.3	38.6	
TOTAL PRECIPITATION (IN)	8.37	6.64	6.21	3.38	2.83	2.28	1.15	1.36	1.65	4.34	7.67	9.75	55.63
EFFECTIVE PRECIP (IN)	.12	.62	1.40	2.09	1.98	1.68	.87	.99	1.13	1.33	.31	.02	12.54

ALFALFA	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.30	2.25	3.90	2.77	1.47	.00	.00	.00	10.70
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.62	2.94	4.75	3.43	1.93	.02	.00	.00	13.69
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.51	2.71	4.47	3.21	1.78	.00	.00	.00	12.68
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.11	3.40	5.87	4.32	2.39	.00	.00	.00	16.09
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.02	4.19	2.99	1.47	.00	.00	.00	10.67
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.60	3.62	2.55	1.17	.00	.00	.00	7.94
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.24	3.86	5.87	4.10	1.47	.00	.00	.00	17.54
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.63	.82	.78	.09	.00	.00	.00	2.32
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.90	2.19	1.78	.00	.00	.00	4.87
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.76	3.06	1.12	.00	.00	.00	.00	.00	5.94
AV. PAN FACTOR	.00	.00	.00	.46	.74	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.64	3.62	2.24	.00	.00	.00	8.49
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.46	3.87	.47	.00	.00	.00	7.81
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.61	1.44	.00	.00	.00	.00	.00	.00	3.05
AV. PAN FACTOR	.00	.00	.00	.46	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.90	1.64	1.58	.00	.00	.00	4.12
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.71	2.71	4.41	2.13	.00	.00	.00	.00	10.96
AV. PAN FACTOR	.00	.00	.00	.48	.73	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.25	1.40	.00	.00	.00	.00	.00	.00	2.65
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.45	2.92	.00	.00	.00	.00	.00	.00	5.37
AV. PAN FACTOR	.00	.00	.00	.50	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.94	3.84	2.16	.00	.00	.00	8.93
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

RADISH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.15	.00	.00	.00	.00	.00	.00	.00	1.15
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.65	.00	.00	.00	.00	.00	.00	.00	1.65
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.85	2.44	2.04	.10	.00	.00	.00	.00	.00	5.44
AV. PAN FACTOR	.00	.68	.72	.88	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.27	3.24	2.09	.00	.00	.00	7.59
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.45	.76	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.25	.87	2.27	.11	.00	.00	.00	.00	.00	.00	3.50
AV. PAN FACTOR	.00	1.06	.93	.88	.85	.42	.12	.12	.12	.55	.86	2.10	

SQUASH	BEG 7/ 9		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.90	1.64	1.58	.00	.00	.00	4.12
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.35	.48	.71	.65	.00	.00	

QUINCY 47.22 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	25.5	34.0	41.2	50.0	58.7	65.6	71.6	70.2	62.4	50.1	36.7	29.1	
TOTAL PRECIPITATION (IN)	.99	.75	.66	.62	.58	.51	.26	.36	.37	.52	1.04	1.19	7.85
EFFECTIVE PRECIP (IN)	.00	.12	.42	.45	.50	.48	.25	.35	.30	.34	.19	.00	3.41

ALFALFA — BEG 4/30 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.79	7.53	9.82	8.12	5.35	1.85	.00	.00	38.46
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER — BEG 4/30 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.46	8.37	10.88	9.01	5.95	2.10	.00	.00	42.77
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF — BEG 4/30 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.12	7.95	10.35	8.56	5.65	1.98	.00	.00	40.62
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER — BEG 4/26 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.14	5.38	9.21	13.00	10.79	6.84	1.85	.00	.00	47.22
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER — BEG 3/29 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.57	5.03	8.37	11.94	9.90	6.25	1.60	.00	.00	44.68
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER — BEG 4/15 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.66	5.38	9.21	13.00	10.79	6.84	1.85	.00	.00	47.74
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.08	5.03	8.37	11.94	9.90	6.25	1.60	.00	.00	44.17
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER — BEG 4/18 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.52	5.03	8.37	11.94	9.90	6.25	1.60	.00	.00	43.61
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER — BEG 4/26 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	3.65	6.68	10.35	8.56	5.35	1.23	.00	.00	35.95
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

QUINCY

COT W/O COVER — BEG 3/29 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.35	3.30	5.84	9.29	7.67	3.87	1.10	.00	.00	32.43
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

RY W/O COVER — BEG 4/15 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.55	3.65	6.68	10.35	8.56	5.35	1.23	.00	.00	36.38
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

H W/O COVER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.90	3.30	5.84	9.29	7.67	3.87	1.10	.00	.00	31.98
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

& PLUM W/O COVER — BEG 4/18 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
NTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.43	3.30	5.84	9.29	7.67	3.87	1.10	.00	.00	31.51
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PES — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.90	5.42	8.76	7.67	4.76	1.23	.00	.00	28.74
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

S — BEG 4/30 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.78	6.68	9.82	13.02	.00	.00	.00	.00	32.31
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

IT — BEG 4/30 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.78	4.58	11.41	10.35	6.84	2.23	.00	.00	38.19
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

SPBERRY — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.90	6.76	9.64	12.47	9.90	4.76	.73	.00	.00	45.16
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

RAMBERRY — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.90	2.27	3.73	2.93	3.21	2.08	.48	.00	.00	15.61
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

BEANS — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
ONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.74	11.22	9.41	.66	.00	.00	.00	24.03
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.87	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.35	8.16	8.53	.53	.00	.00	.00	19.57
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.63	.80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.15	5.39	8.76	4.90	.00	.00	.00	.00	.00	20.20
AV. PAN FACTOR	.00	.00	.00	.38	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.81	3.67	10.13	9.90	5.58	.26	.00	.00	30.35
AV. PAN FACTOR	.00	.00	.00	.00	.33	.39	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.81	4.53	11.60	5.60	.00	.00	.00	.00	22.54
AV. PAN FACTOR	.00	.00	.00	.00	.33	.48	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.15	5.18	7.02	.00	.00	.00	.00	.00	.00	13.35
AV. PAN FACTOR	.00	.00	.00	.38	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.28	6.48	8.08	5.31	.64	.00	.00	22.78
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.25	6.01	8.37	10.85	7.76	.60	.00	.00	.00	34.83
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	4.40	6.86	.00	.00	.00	.00	.00	.00	12.40
AV. PAN FACTOR	.00	.00	.00	.37	.57	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.28	6.85	9.56	2.25	.00	.00	.00	.00	.00	19.94
AV. PAN FACTOR	.00	.00	.00	.41	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.81	3.89	11.12	9.88	4.65	.00	.00	.00	30.35
AV. PAN FACTOR	.00	.00	.00	.00	.33	.41	.86	.92	.74	.00	.00	.00	

RADISH	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.88	5.30	.00	.00	.00	.00	.00	.00	.00	7.19
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.15	5.23	9.21	10.48	1.01	.00	.00	.00	.00	27.07
AV. PAN FACTOR	.00	.00	.00	.38	.66	.92	.81	.31	.00	.00	.00	.00	

SORGHUM	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.35	8.27	9.45	5.72	.48	.00	.00	26.28
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.88	.81	.54	.00	.00	

SOYBEANS	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.81	4.22	10.75	9.45	5.41	.19	.00	.00	30.84
AV. PAN FACTOR	.00	.00	.00	.00	.33	.45	.83	.88	.77	.43	.00	.00	

SPINACH	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.16	5.55	1.51	.00	.00	.00	.00	.00	.00	8.22
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 3/12	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.37	3.09	7.44	9.21	7.06	.00	.00	.00	.00	.00	27.17
AV. PAN FACTOR	.00	.00	.47	.63	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	3.71	8.27	11.94	9.84	5.99	.26	.00	.00	41.15
AV. PAN FACTOR	.00	.00	.00	.37	.49	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	4.56	9.12	11.39	2.37	.00	.00	.00	.00	28.58
AV. PAN FACTOR	.00	.00	.00	.37	.59	.91	.88	.47	.00	.00	.00	.00	

TOMATO	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.81	3.30	8.94	9.45	5.50	.32	.00	.00	28.32
AV. PAN FACTOR	.00	.00	.00	.00	.33	.36	.69	.88	.78	.43	.00	.00	

WINTER WHEAT	BEG 3/12	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.68	4.46	7.45	8.47	3.31	.98	.52	.90	.00	.00	26.76
AV. PAN FACTOR	.00	.00	.67	.87	.92	.85	.39	.12	.12	.45	.84	.00	

SQUASH	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.28	6.48	8.06	1.95	.00	.00	.00	18.78
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.65	.00	.00	.00	

REPUBLIC 48.65 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	20.3	28.0	33.7	42.7	50.9	57.6	63.4	62.3	54.5	43.3	31.0	23.5	
TOTAL PRECIPITATION (IN)	1.90	1.30	1.19	1.09	1.60	1.49	.84	1.31	.82	.96	1.52	2.11	16.13
EFFECTIVE PRECIP (IN)	.00	.00	.71	.75	1.17	1.12	.77	1.05	.59	.59	.00	.00	6.74

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.42	4.78	7.20	5.54	3.49	.14	.00	.00	22.58
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.65	5.40	8.04	6.23	3.92	.19	.00	.00	25.44
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.54	5.09	7.62	5.89	3.70	.17	.00	.00	24.01
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.27	6.03	9.71	7.62	4.56	.14	.00	.00	29.34
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.65	5.40	8.88	6.93	4.13	.10	.00	.00	28.21
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.06	6.03	9.71	7.62	4.56	.14	.00	.00	30.13
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	2.65	5.40	8.88	6.93	4.13	.10	.00	.00	28.12
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.65	5.40	8.88	6.93	4.13	.10	.00	.00	27.08
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.65	4.16	7.62	5.89	3.49	.02	.00	.00	21.83
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

REPUBLIC

APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.46	3.54	6.78	5.19	2.42	.00	.00	.00	19.44
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.06	4.16	7.62	5.89	3.49	.02	.00	.00	22.24
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	1.46	3.54	6.78	5.19	2.42	.00	.00	.00	19.40
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.76	3.54	6.78	5.19	2.42	.00	.00	.00	18.69
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.67	6.36	5.19	3.06	.02	.00	.00	17.31
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.38	4.16	7.20	9.36	.00	.00	.00	.00	21.10
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.38	2.61	8.46	7.28	4.56	.21	.00	.00	23.50
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	3.85	6.34	9.29	6.93	3.06	.00	.00	.00	29.48
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	.74	1.99	1.75	1.73	1.13	.00	.00	.00	7.35
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.30	5.20	7.27	2.32	.00	.00	.00	15.10
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.57	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.30	3.72	5.63	2.28	.00	.00	.00	11.93
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.43	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.69	5.27	7.94	.57	.00	.00	.00	.00	15.54
AV. PAN FACTOR	.00	.00	.00	.42	.48	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.08	5.60	6.86	4.15	.04	.00	.00	17.73
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.61	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.22	7.29	6.55	.00	.00	.00	.00	15.07
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.66	5.00	3.65	.00	.00	.00	.00	.00	10.37
AV. PAN FACTOR	.00	.00	.00	.42	.47	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.30	3.18	4.80	3.49	.14	.00	.00	11.91
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.38	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	2.00	5.35	8.04	6.03	2.24	.00	.00	.00	23.73
AV. PAN FACTOR	.00	.00	.00	.42	.53	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.48	4.44	3.65	.00	.00	.00	.00	.00	9.64
AV. PAN FACTOR	.00	.00	.00	.42	.44	.72	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	2.18	6.27	7.23	.00	.00	.00	.00	.00	15.75
AV. PAN FACTOR	.00	.00	.00	.42	.56	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.09	6.49	6.93	3.97	.08	.00	.00	18.55
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.69	.92	.85	.65	.00	.00	

RADISH	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	2.56	.00	.00	.00	.00	.00	.00	.00	2.62
AV. PAN FACTOR	.00	.00	.00	.42	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.66	5.29	8.88	3.58	.00	.00	.00	.00	19.48
AV. PAN FACTOR	.00	.00	.00	.42	.47	.83	.92	.59	.00	.00	.00	.00	

SORGHUM	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.30	3.73	6.03	4.13	.08	.00	.00	14.27
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.43	.82	.88	.66	.00	.00	

SOYBEANS	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.19	6.55	6.58	4.06	.01	.00	.00	18.39
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.70	.88	.87	.53	.00	.00	

SPINACH	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.76	3.77	.00	.00	.00	.00	.00	.00	5.61
AV. PAN FACTOR	.00	.00	.00	.42	.49	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 4/ 2	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.46	3.31	6.03	8.53	1.61	.00	.00	.00	.00	19.94
AV. PAN FACTOR	.00	.00	.00	.42	.75	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.07	1.38	3.88	8.69	6.93	4.19	.18	.00	.00	25.31
AV. PAN FACTOR	.00	.00	.00	.42	.43	.64	.90	.92	.89	.82	.00	.00	

SUNFLOWER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.49	4.88	8.88	5.20	.09	.00	.00	.00	20.60
AV. PAN FACTOR	.00	.00	.00	.42	.45	.77	.92	.72	.32	.00	.00	.00	

TOMATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.06	4.71	6.35	4.05	.00	.00	.00	16.17
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.52	.85	.86	.51	.00	.00	

WINTER WHEAT	BEG 4/ 2	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.22	4.25	6.03	6.76	.39	.00	.02	.00	.00	18.68
AV. PAN FACTOR	.00	.00	.00	.65	.91	.92	.72	.28	.12	.53	.00	.00	

SQUASH	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.30	3.18	4.80	3.04	.00	.00	.00	11.33
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.38	.67	.72	.00	.00	.00	

RICHLAND 46.28 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	33.5	40.4	46.3	53.9	62.1	69.4	75.7	74.0	66.3	54.7	42.7	36.6	
TOTAL PRECIPITATION (IN)	1.03	.69	.50	.42	.53	.44	.14	.32	.28	.46	.91	1.06	6.78
EFFECTIVE PRECIP (IN)	.00	.27	.33	.32	.46	.42	.14	.31	.23	.31	.20	.00	2.98

ALFALFA BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.84	6.24	7.62	9.79	7.93	5.20	1.94	.00	.00	39.56
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.93	6.94	8.47	10.83	8.80	5.78	2.19	.00	.00	43.94
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.88	6.59	8.05	10.31	8.36	5.49	2.07	.00	.00	41.75
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/20 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.53	5.53	9.32	12.92	10.53	6.63	1.94	.00	.00	47.40
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.16	1.86	5.18	8.47	11.88	9.66	6.06	1.70	.00	.00	44.96
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/ 9 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.17	5.53	9.32	12.92	10.53	6.63	1.94	.00	.00	48.05
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 3/31 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.70	5.18	8.47	11.88	9.66	6.06	1.70	.00	.00	44.64
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/12 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.00	5.18	8.47	11.88	9.66	6.06	1.70	.00	.00	43.94
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 4/20 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	3.77	6.78	10.31	8.36	5.20	1.33	.00	.00	36.20
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 3/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.13	1.61	3.42	5.93	9.26	7.50	3.78	1.20	.00	.00	32.83
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/ 9		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.01	3.77	6.78	10.31	8.36	5.20	1.33	.00	.00	36.76
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 3/31		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.47	3.42	5.93	9.26	7.50	3.78	1.20	.00	.00	32.55
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/12		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.86	3.42	5.93	9.26	7.50	3.78	1.20	.00	.00	31.94
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/11		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.62	5.51	8.74	7.50	4.63	1.33	.00	.00	29.32
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.40	3.06	6.78	9.79	12.70	.00	.00	.00	.00	32.72
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.40	3.06	4.66	11.35	10.10	6.63	2.31	.00	.00	38.52
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 3/30		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.61	6.94	9.74	12.40	9.66	4.63	.83	.00	.00	45.82
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/30		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.61	2.36	3.81	3.00	3.16	2.06	.59	.00	.00	16.59
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 5/31		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.62	11.73	8.49	.26	.00	.00	.00	24.10
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.91	.81	.31	.00	.00	.00	

GREEN BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.96	8.79	8.01	.00	.00	.00	.00	19.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.68	.79	.00	.00	.00	.00	

CARROTS	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.49	6.46	8.64	2.59	.00	.00	.00	.00	.00	20.18
AV. PAN FACTOR	.00	.00	.44	.47	.79	.86	.69	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.45	4.56	11.08	9.66	4.51	.00	.00	.00	31.27
AV. PAN FACTOR	.00	.00	.00	.00	.33	.47	.86	.92	.69	.00	.00	.00	

SWEET CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.45	5.98	11.07	2.97	.00	.00	.00	.00	22.28
AV. PAN FACTOR	.00	.00	.00	.00	.33	.61	.92	.88	.00	.00	.00	.00	

CRUCIFER	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.48	6.19	5.14	.00	.00	.00	.00	.00	.00	13.81
AV. PAN FACTOR	.00	.00	.44	.46	.75	.81	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.76	7.17	7.93	5.09	.52	.00	.00	23.47
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.56	.76	.74	.64	.00	.00	

DRY ONION	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.71	6.72	8.47	10.68	6.66	.00	.00	.00	.00	35.23
AV. PAN FACTOR	.00	.00	.44	.50	.81	.84	.83	.71	.00	.00	.00	.00	

GREEN ONION	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.38	5.53	5.08	.00	.00	.00	.00	.00	.00	12.99
AV. PAN FACTOR	.00	.00	.44	.45	.68	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.82	7.71	9.18	.00	.00	.00	.00	.00	.00	19.70
AV. PAN FACTOR	.00	.00	.44	.52	.93	.94	.00	.00	.00	.00	.00	.00	

POTATO	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.45	5.06	11.73	9.44	3.00	.00	.00	.00	30.68
AV. PAN FACTOR	.00	.00	.00	.00	.33	.52	.91	.90	.70	.00	.00	.00	

RADISH — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	3.31	.85	.00	.00	.00	.00	.00	.00	.00	4.16
AV. PAN FACTOR	.00	.00	.44	.60	.66	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.49	6.43	9.32	8.78	.18	.00	.00	.00	.00	27.19
AV. PAN FACTOR	.00	.00	.44	.46	.78	.92	.68	.21	.00	.00	.00	.00	

SORGHUM — BEG 5/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.95	9.03	9.23	5.29	.39	.00	.00	26.89
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.70	.88	.77	.51	.00	.00	

SOYBEANS — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.45	5.40	11.23	9.23	4.26	.00	.00	.00	31.57
AV. PAN FACTOR	.00	.00	.00	.00	.33	.55	.87	.88	.66	.00	.00	.00	

SPINACH — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.53	5.94	.00	.00	.00	.00	.00	.00	.00	8.47
AV. PAN FACTOR	.00	.00	.44	.47	.76	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/ 4 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.84	4.13	7.65	9.10	4.27	.00	.00	.00	.00	.00	25.99
AV. PAN FACTOR	.00	.00	.44	.74	.92	.90	.45	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.35	4.88	8.95	11.88	9.51	5.12	.00	.00	.00	42.69
AV. PAN FACTOR	.00	.00	.44	.44	.61	.89	.92	.91	.84	.00	.00	.00	

SUNFLOWER — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.38	5.90	9.32	10.32	.99	.00	.00	.00	.00	28.90
AV. PAN FACTOR	.00	.00	.44	.45	.72	.92	.80	.38	.00	.00	.00	.00	

TOMATO — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.45	3.94	10.07	9.23	4.56	.10	.00	.00	29.36
AV. PAN FACTOR	.00	.00	.00	.00	.33	.41	.78	.88	.67	.36	.00	.00	

WINTER WHEAT — BEG 3/ 4 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	1.48	5.15	7.65	7.46	1.59	.98	.58	1.08	.00	.00	25.97
AV. PAN FACTOR	.00	.00	.67	.90	.92	.74	.30	.12	.12	.44	.68	.00	

SQUASH — BEG 5/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.76	7.17	7.79	1.37	.00	.00	.00	19.10
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.56	.75	.68	.00	.00	.00	

RITZVILLE 47.12 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	26.9	34.0	39.5	46.8	54.8	62.5	69.9	68.5	60.9	49.4	36.5	30.3	
TOTAL PRECIPITATION (IN)	1.42	1.07	.91	.82	.88	.76	.34	.46	.58	.89	1.47	1.73	11.33
EFFECTIVE PRECIP (IN)	.00	.16	.56	.57	.66	.63	.33	.42	.45	.57	.08	.00	4.43

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.98	5.86	8.56	6.98	4.36	.33	.00	.00	28.07
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.24	6.55	9.49	7.76	4.87	.39	.00	.00	31.29
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.11	6.21	9.02	7.37	4.61	.36	.00	.00	29.68
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.84	7.23	11.36	9.32	5.62	.33	.00	.00	35.71
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.33	3.53	6.55	10.43	8.54	5.12	.26	.00	.00	34.75
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.00	7.23	11.36	9.32	5.62	.33	.00	.00	36.86
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	3.53	6.55	10.43	8.54	5.12	.26	.00	.00	34.53
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.46	6.55	10.43	8.54	5.12	.26	.00	.00	33.35
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.17	5.18	9.02	7.37	4.36	.16	.00	.00	27.27
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER — BEG 4/16 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.25	2.22	4.50	8.09	6.59	3.10	.13	.00	.00	24.88
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER — BEG 5/ 4 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.90	5.18	9.02	7.37	4.36	.16	.00	.00	28.00
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	2.22	4.50	8.09	6.59	3.10	.13	.00	.00	24.71
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER — BEG 5/ 7 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.48	4.50	8.09	6.59	3.10	.13	.00	.00	23.89
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.75	7.62	6.59	3.85	.16	.00	.00	21.99
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS — BEG 5/15 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.84	5.18	8.56	11.27	.00	.00	.00	.00	25.85
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT — BEG 5/15 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.84	3.47	9.96	8.93	5.62	.42	.00	.00	29.25
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	4.84	7.57	10.90	8.54	3.85	.04	.00	.00	35.82
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	1.44	2.79	2.47	2.70	1.58	.00	.00	.00	11.05
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.55	6.26	8.93	3.06	.00	.00	.00	18.79
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.55	4.58	7.07	2.94	.00	.00	.00	15.15
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.37	6.38	9.38	.78	.00	.00	.00	.00	19.03
AV. PAN FACTOR	.00	.00	.00	.40	.46	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.93	6.71	8.46	5.14	.19	.00	.00	22.43
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.09	8.63	8.38	.00	.00	.00	.00	19.10
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.34	6.08	4.36	.00	.00	.00	.00	.00	12.91
AV. PAN FACTOR	.00	.00	.00	.40	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.55	3.97	6.13	4.36	.32	.00	.00	15.32
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.73	6.48	9.49	7.54	2.94	.00	.00	.00	29.30
AV. PAN FACTOR	.00	.00	.00	.40	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.13	5.46	4.36	.00	.00	.00	.00	.00	12.07
AV. PAN FACTOR	.00	.00	.00	.40	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.93	7.49	8.56	.00	.00	.00	.00	.00	19.10
AV. PAN FACTOR	.00	.00	.00	.40	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.94	7.72	8.54	4.92	.24	.00	.00	23.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

RADISH	BEG 4/25	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	3.40	.00	.00	.00	.00	.00	.00	.00	3.53
AV. PAN FACTOR	.00	.00	.00	.40	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 4/25	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.34	6.39	10.43	4.97	.00	.00	.00	.00	24.26
AV. PAN FACTOR	.00	.00	.00	.40	.46	.82	.92	.59	.00	.00	.00	.00	

SORGHUM	BEG 6/21	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.55	4.59	7.52	5.12	.25	.00	.00	18.01
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.81	.88	.66	.00	.00	

SOYBEANS	BEG 6/ 1	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	2.05	7.79	8.15	5.03	.14	.00	.00	23.17
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.69	.88	.87	.53	.00	.00	

SPINACH	BEG 4/25	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.46	4.88	.00	.00	.00	.00	.00	.00	7.46
AV. PAN FACTOR	.00	.00	.00	.40	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 4/ 2	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.86	4.21	7.23	10.04	2.50	.00	.00	.00	.00	24.84
AV. PAN FACTOR	.00	.00	.00	.41	.74	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET	BEG 4/25	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.13	2.02	4.79	10.21	8.54	5.18	.37	.00	.00	31.24
AV. PAN FACTOR	.00	.00	.00	.40	.41	.63	.90	.92	.89	.82	.00	.00	

SUNFLOWER	BEG 4/25	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.13	2.15	5.92	10.43	6.60	.14	.00	.00	.00	25.36
AV. PAN FACTOR	.00	.00	.00	.40	.43	.77	.92	.72	.32	.00	.00	.00	

TOMATO	BEG 6/ 1	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.91	5.70	7.89	5.02	.12	.00	.00	20.64
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT	BEG 4/ 2	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.72	5.27	7.23	8.07	.80	.18	.32	.00	.00	23.59
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.49	1.11	.00	

SQUASH	BEG 6/21	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.55	3.97	6.13	3.97	.00	.00	.00	14.62
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

ROSALIA 47.23 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	27.3	33.6	37.9	45.2	52.8	59.3	66.3	65.7	58.0	47.8	36.3	30.6	
TOTAL PRECIPITATION (IN)	2.35	1.56	1.43	1.30	1.48	1.32	.51	.85	.80	1.34	2.01	2.42	17.37
EFFECTIVE PRECIP (IN)	.00	.22	.87	.91	1.09	1.02	.49	.72	.59	.84	.12	.00	6.86

ALFALFA	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.57	5.04	7.82	6.29	3.89	.14	.00	.00	24.75
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.81	5.68	8.70	7.03	4.36	.20	.00	.00	27.77
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.69	5.36	8.26	6.66	4.12	.17	.00	.00	26.26
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.42	6.31	10.45	8.51	5.06	.14	.00	.00	31.89
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 4/16		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.08	2.88	5.68	9.58	7.77	4.59	.08	.00	.00	30.65
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 5/ 4		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.30	6.31	10.45	8.51	5.06	.14	.00	.00	32.77
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	2.88	5.68	9.58	7.77	4.59	.08	.00	.00	30.60
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.85	5.68	9.58	7.77	4.59	.08	.00	.00	29.54
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.77	4.40	8.26	6.66	3.89	.00	.00	.00	23.99
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	1.64	3.76	7.39	5.92	2.71	.00	.00	.00	21.43
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.26	4.40	8.26	6.66	3.89	.00	.00	.00	24.47
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.64	3.76	7.39	5.92	2.71	.00	.00	.00	21.42
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.93	3.76	7.39	5.92	2.71	.00	.00	.00	20.71
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.93	6.95	5.92	3.42	.00	.00	.00	19.22
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.49	4.40	7.82	10.35	.00	.00	.00	.00	23.06
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.49	2.81	9.14	8.14	5.06	.23	.00	.00	25.86
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.12	6.63	10.01	7.77	3.42	.00	.00	.00	31.95
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.89	2.17	2.13	2.23	1.30	.00	.00	.00	8.73
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.36	5.72	8.13	2.63	.00	.00	.00	16.84
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.57	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.36	4.17	6.38	2.57	.00	.00	.00	13.48
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.43	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.82	5.53	8.60	.68	.00	.00	.00	.00	16.67
AV. PAN FACTOR	.00	.00	.00	.41	.47	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.28	6.14	7.69	4.61	.01	.00	.00	19.74
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.61	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.43	7.91	7.52	.00	.00	.00	.00	16.86
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.79	5.25	3.99	.00	.00	.00	.00	.00	11.08
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.36	3.60	5.50	3.89	.13	.00	.00	13.48
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	2.15	5.62	8.70	6.81	2.53	.00	.00	.00	25.87
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.59	4.67	3.99	.00	.00	.00	.00	.00	10.31
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	2.34	6.56	7.85	.00	.00	.00	.00	.00	16.80
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.29	7.07	7.77	4.41	.06	.00	.00	20.60
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.69	.92	.85	.65	.00	.00	

RADISH	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	2.77	.00	.00	.00	.00	.00	.00	.00	2.82
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.79	5.54	9.58	4.32	.00	.00	.00	.00	21.28
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	.00	

SORGHUM	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.36	4.17	6.81	4.59	.06	.00	.00	16.00
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.43	.82	.88	.66	.00	.00	

SOYBEANS	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.40	7.14	7.40	4.51	.00	.00	.00	20.44
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.90	4.04	.00	.00	.00	.00	.00	.00	6.00
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 4/ 2	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.36	3.54	6.31	9.21	2.09	.00	.00	.00	.00	21.52
AV. PAN FACTOR	.00	.00	.00	.41	.75	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.05	1.49	4.06	9.38	7.77	4.65	.18	.00	.00	27.59
AV. PAN FACTOR	.00	.00	.00	.41	.42	.64	.90	.92	.89	.82	.00	.00	

SUNFLOWER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.61	5.11	9.58	5.92	.11	.00	.00	.00	22.38
AV. PAN FACTOR	.00	.00	.00	.41	.44	.77	.92	.72	.32	.00	.00	.00	

TOMATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.27	5.20	7.15	4.50	.00	.00	.00	18.12
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.52	.85	.86	.51	.00	.00	

WINTER WHEAT	BEG 4/ 2	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.18	4.54	6.31	7.37	.61	.00	.00	.00	.00	20.01
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.50	1.14	.00	

SQUASH	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.36	3.60	5.50	3.44	.00	.00	.00	12.90
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.37	.67	.72	.00	.00	.00	

SEATTLE U OF W 47.65 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	40.0	43.7	45.5	50.4	56.8	61.5	66.2	65.8	61.6	54.0	46.0	42.3	
TOTAL PRECIPITATION (IN)	5.24	3.79	3.46	2.39	1.52	1.59	.91	1.05	1.90	3.03	4.92	5.70	35.50
EFFECTIVE PRECIP (IN)	.16	.79	1.62	1.62	1.12	1.18	.73	.79	1.33	1.61	.50	.13	11.57

ALFALFA — BEG 5/10 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.67	3.37	4.90	3.84	1.83	.00	.00	.00	15.63
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER — BEG 5/10 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.14	4.18	5.90	4.66	2.39	.13	.00	.00	19.40
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF — BEG 5/10 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.99	3.91	5.57	4.39	2.21	.04	.00	.00	18.10
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER — BEG 5/ 4 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.77	4.71	7.22	5.75	2.95	.00	.00	.00	22.41
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER — BEG 5/ 4 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.96	3.11	5.23	4.11	1.83	.00	.00	.00	15.25
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES — BEG 6/ 3 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.87	4.57	3.57	1.46	.00	.00	.00	11.47
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.96	5.25	7.22	5.48	1.83	.00	.00	.00	23.75
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY — BEG 3/27 — END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.82	1.50	1.26	1.39	.16	.00	.00	.00	5.13
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.42	3.85	1.47	.00	.00	.00	7.74
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.38	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.55	3.66	4.18	.84	.00	.00	.00	.00	.00	9.23
AV. PAN FACTOR	.00	.00	.51	.55	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.68	4.00	5.11	2.69	.00	.00	.00	12.48
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.57	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.75	5.21	5.15	.12	.00	.00	.00	11.23
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.53	3.45	1.87	.00	.00	.00	.00	.00	.00	5.86
AV. PAN FACTOR	.00	.00	.51	.54	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.26	3.15	2.02	.00	.00	.00	7.43
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.36	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.64	3.43	3.91	5.45	2.72	.00	.00	.00	.00	16.15
AV. PAN FACTOR	.00	.00	.51	.57	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.46	3.09	1.86	.00	.00	.00	.00	.00	.00	5.42
AV. PAN FACTOR	.00	.00	.51	.52	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.77	4.37	3.82	.00	.00	.00	.00	.00	.00	8.97
AV. PAN FACTOR	.00	.00	.51	.60	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.68	4.59	5.20	2.50	.00	.00	.00	12.97
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.64	.88	.82	.62	.00	.00	

RADISH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.80	.14	.00	.00	00	.00	.00	.00	.00	.94
AV. PAN FACTOR	.00	.00	.51	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.56	2.58	.00	.00	.00	.00	.00	.00	.00	3.15
AV. PAN FACTOR	.00	.00	.51	.55	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.86	4.21	3.13	.20	.00	.00	.00	.00	.00	9.39
AV. PAN FACTOR	.00	.63	.69	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.68	3.39	4.71	2.57	.00	.00	.00	11.34
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.50	.81	.84	.55	.00	.00	

WINTER WHEAT BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	1.88	4.01	1.00	.08	.00	.00	.00	.00	.00	7.21
AV. PAN FACTOR	.00	.95	.90	.88	.85	.42	.12	.12	.12	.51	.74	1.13	

SQUASH BEG 6/29 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.26	3.15	1.98	.00	.00	.00	7.39
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.36	.58	.71	.60	.00	.00	

SEATTLE-TACOMA 47.45 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
EAN TEMPERATURE (F)	39.1	42.8	44.2	48.7	55.0	60.2	64.8	64.1	60.0	52.5	44.8	41.0	
OTAL PRECIPITATION (IN)	6.04	4.22	3.59	2.40	1.58	1.38	.74	1.27	2.02	3.43	5.60	6.33	38.60
FFECTIVE PRECIP (IN)	.13	.74	1.53	1.61	1.15	1.02	.60	.94	1.40	1.61	.45	.08	11.26

ALFALFA	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.51	3.39	4.86	3.52	1.63	.00	.00	.00	14.91
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.96	4.17	5.83	4.30	2.17	.04	.00	.00	18.46
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.81	3.91	5.51	4.04	1.99	.00	.00	.00	17.25
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 5/ 4		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.58	4.69	7.11	5.35	2.71	.00	.00	.00	21.43
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 5/ 4		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	3.13	5.19	3.78	1.63	.00	.00	.00	14.53
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 6/ 3		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.95	4.54	3.25	1.28	.00	.00	.00	11.02
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.69	5.20	7.11	5.09	1.63	.00	.00	.00	22.73
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.69	1.57	1.33	1.16	.03	.00	.00	.00	4.78
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.49	3.53	1.22	.00	.00	.00	7.24
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.38	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.48	3.41	4.17	.85	.00	.00	.00	.00	.00	8.90
AV. PAN FACTOR	.00	.00	.52	.55	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.82	4.01	4.74	2.46	.00	.00	.00	12.02
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.57	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.88	5.17	4.77	.11	.00	.00	.00	10.93
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.46	3.21	1.90	.00	.00	.00	.00	.00	.00	5.58
AV. PAN FACTOR	.00	.00	.52	.55	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.32	2.86	1.81	.00	.00	.00	7.00
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.56	3.19	3.91	5.39	2.41	.00	.00	.00	.00	15.45
AV. PAN FACTOR	.00	.00	.52	.58	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.40	2.88	1.89	.00	.00	.00	.00	.00	.00	5.17
AV. PAN FACTOR	.00	.00	.52	.53	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.69	4.08	3.84	.00	.00	.00	.00	.00	.00	8.61
AV. PAN FACTOR	.00	.00	.52	.61	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.82	4.57	4.83	2.27	.00	.00	.00	12.49
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.64	.88	.82	.62	.00	.00	

RADISH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.69	.12	.00	.00	.00	.00	.00	.00	.00	.81
AV. PAN FACTOR	.00	.00	.52	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.49	2.35	.00	.00	.00	.00	.00	.00	.00	2.84
AV. PAN FACTOR	.00	.00	.52	.56	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.68	3.92	3.15	.21	.00	.00	.00	.00	.00	8.97
AV. PAN FACTOR	.00	.64	.70	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.82	3.41	4.35	2.34	.00	.00	.00	10.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT BEG 2/14 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.23	1.70	3.73	1.10	.22	.00	.00	.00	.00	.00	6.99
AV. PAN FACTOR	.00	.90	.91	.88	.85	.42	.12	.12	.12	.52	.76	1.30	

SQUASH BEG 6/29 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.32	2.86	1.77	.00	.00	.00	6.96
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.71	.60	.00	.00	

SEDRO WOLLEY 48.50 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	37.7	41.7	43.7	48.6	54.4	59.0	62.3	62.4	58.5	51.2	43.8	40.1	
TOTAL PRECIPITATION (IN)	6.03	4.64	3.99	3.56	2.63	2.29	1.52	1.98	3.09	4.35	5.77	6.59	46.44
EFFECTIVE PRECIP (IN)	.15	.66	1.43	2.19	1.88	1.69	1.13	1.41	2.02	1.37	.36	.06	14.33

ALFALFA BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.42	2.26	3.56	2.32	.59	.00	.00	.00	9.15
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.74	2.95	4.38	2.97	1.05	.02	.00	.00	12.12
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.63	2.72	4.11	2.75	.90	.00	.00	.00	11.12
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.24	3.42	5.48	3.85	1.51	.00	.00	.00	14.51
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/12 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.03	3.83	2.54	.59	.00	.00	.00	8.98
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/10 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.61	3.28	2.10	.28	.00	.00	.00	6.27
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.38	3.88	5.48	3.63	.59	.00	.00	.00	15.97
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.63	.53	.34	.00	.00	.00	.00	1.50
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

SEDRO WOLLEY

GREEN BEANS	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.63	1.75	.90	.00	.00	.00	3.28
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.89	3.07	.98	.00	.00	.00	.00	.00	5.94
AV. PAN FACTOR	.00	.00	.00	.45	.74	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.31	3.16	1.36	.00	.00	.00	6.83
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.12	3.41	.04	.00	.00	.00	6.57
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.74	1.45	.00	.00	.00	.00	.00	.00	3.19
AV. PAN FACTOR	.00	.00	.00	.45	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.63	1.21	.70	.00	.00	.00	2.54
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.85	2.72	4.05	1.52	.00	.00	.00	.00	10.14
AV. PAN FACTOR	.00	.00	.00	.48	.73	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.38	1.41	.00	.00	.00	.00	.00	.00	2.79
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.60	2.93	.00	.00	.00	.00	.00	.00	5.53
AV. PAN FACTOR	.00	.00	.00	.50	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.60	3.37	1.28	.00	.00	.00	7.25
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

RADISH BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1 28	.00	.00	.00	.00	.00	.00	.00	1.28
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	00	.00	.00	.00	.00	.00	

SPINACH BEG 3/31 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.78	.00	.00	.00	.00	.00	.00	.00	1.78
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 2/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.81	2.58	2.05	.04	.00	.00	.00	.00	.00	5.48
AV. PAN FACTOR	.00	.66	.71	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO BEG 6/10 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.95	2.78	1.21	.00	.00	.00	5.93
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.45	.76	.84	.64	.35	.00	

WINTER WHEAT BEG 2/14 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.25	.83	2.42	.11	.00	.00	.00	.00	.00	.00	3.60
AV. PAN FACTOR	.00	1.03	.92	.88	.85	.42	.12	.12	.12	.54	.82	1.43	

SQUASH BEG 7/ 9 END 11/13

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	.63	1.21	.70	.00	.00	.00	2.54
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.65	.00	.00	

SEQUIM 48.08 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.3	41.6	43.3	47.6	53.3	57.7	61.4	61.5	58.4	50.9	43.5	40.2	
TOTAL PRECIPITATION (IN)	2.37	1.37	1.31	1.06	.94	1.03	.49	.78	.97	1.37	2.20	2.50	16.39
EFFECTIVE PRECIP (IN)	.19	.39	.80	.71	.67	.74	.39	.56	.67	.83	.35	.08	6.38

ALFALFA	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.24	3.06	4.18	3.07	1 93	.34	.00	.00	13.82
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.54	3.73	4.98	3.72	2.39	.55	.00	.00	16.91
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/14		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.44	3.51	4.71	3.50	2.23	.48	.00	.00	15.88
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLE W/O COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.71	2.84	4.44	3.29	1.93	.07	.00	.00	13.27
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

APPLES W/COVER	BEG 5/12		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.16	4.18	6.06	4.57	2.85	.41	.00	.00	19.23
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

GRAPES	BEG 6/10		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.33	3.91	2.86	1.62	.00	.00	.00	9.72
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.45	4.63	6.06	4.36	1.93	.00	.00	.00	20.42
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/31		END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.90	1.50	1.22	1.15	.55	.00	.00	.00	5.32
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

SEQUIM

GREEN BEANS	BEG 7/ 9	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.30	2.53	2.23	.00	.00	.00	6.06
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.58	.76	.71	.00	.00	

CARROTS	BEG 3/31	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.44	2.99	3.84	1.27	.00	.00	.00	.00	.00	8.55
AV. PAN FACTOR	.00	.00	.00	.46	.75	.82	.66	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/10	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.68	2.98	3.90	2.69	.00	.00	.00	10.25
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.50	.83	.88	.65	.00	.00	

SWEET CORN	BEG 6/10	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.68	3.77	4.14	.67	.00	.00	.00	9.26
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.62	.88	.84	.00	.00	.00	

CRUCIFER	BEG 3/31	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.44	2.84	2.18	.00	.00	.00	.00	.00	.00	5.46
AV. PAN FACTOR	.00	.00	.00	.46	.71	.77	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 7/ 9	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	1.30	2.00	2.04	.41	.00	.00	5.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.72	.63	.00	

DRY ONION	BEG 3/31	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.52	2.94	3.51	4.66	2.56	.00	.00	.00	.00	14.19
AV. PAN FACTOR	.00	.00	.00	.48	.74	.76	.75	.66	.00	.00	.00	.00	

GREEN ONION	BEG 3/31	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.39	2.49	2.15	.00	.00	.00	.00	.00	.00	5.03
AV. PAN FACTOR	.00	.00	.00	.44	.64	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/31	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.59	3.66	4.00	.00	.00	.00	.00	.00	.00	8.26
AV. PAN FACTOR	.00	.00	.00	.51	.88	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/10	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.68	3.27	4.11	2.61	.00	.00	.00	10.66
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.54	.87	.86	.66	.00	.00	

SEQUIM

RADISH	BEG 3/31	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.80	2.39	.00	.00	.00	.00	.00	.00	.00	3.19
AV. PAN FACTOR	.00	.00	.00	.57	.62	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/31	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	2.88	.00	.00	.00	.00	.00	.00	.00	3.33
AV. PAN FACTOR	.00	.00	.00	.46	.72	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.48	2.18	3.65	2.86	.20	.00	.00	.00	.00	.00	9.36
AV. PAN FACTOR	.00	.66	.71	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/10	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.68	2.63	3.53	2.54	.27	.00	.00	9.64
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.45	.76	.84	.64	.35	.00	

WINTER WHEAT	BEG 2/14	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.85	2.19	3.49	1.09	.32	.00	.00	.00	.00	.00	7.93
AV. PAN FACTOR	.00	1.03	.92	.88	.85	.42	.12	.12	.12	.54	.82	1.32	

SQUASH	BEG 7/ 9	END 11/13										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.30	2.00	2.04	.00	.00	.00	5.34
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.36	.48	.71	.65	.00	.00	

SHELTON 47.20 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.6	41.9	43.8	48.7	55.0	60.2	64.4	64.2	59.6	51.6	44.0	40.3	
TOTAL PRECIPITATION (IN)	11.40	7.78	6.80	4.12	2.03	1.61	.92	1.38	2.61	5.78	9.72	11.45	65.60
EFFECTIVE PRECIP (IN)	.11	.70	1.50	2.58	1.45	1.19	.73	1.02	1.81	1.56	.42	.06	13.13

ALFALFA	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.21	3.21	4.67	3.44	1.20	.00	.00	.00	13.73
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.66	3.99	5.63	4.22	1.73	.03	.00	.00	17.25
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.51	3.73	5.31	3.96	1.55	.00	.00	.00	16.06
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 5/ 4		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.19	4.51	6.90	5.27	2.26	.00	.00	.00	20.13
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 5/ 4		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.42	2.95	4.99	3.70	1.20	.00	.00	.00	13.26
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 6/ 3		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.74	4.36	3.17	.85	.00	.00	.00	10.12
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.38	5.02	6.90	5.01	1.20	.00	.00	.00	21.51
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.39	1.40	1.18	1.08	.00	.00	.00	.00	4.04
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.32	3.45	.64	.00	.00	.00	6.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.38	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.10	3.99	.80	.00	.00	.00	.00	.00	7.89
AV. PAN FACTOR	.00	.00	.53	.56	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.61	3.83	4.66	2.01	.00	.00	.00	11.11
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.57	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.68	4.98	4.69	.06	.00	.00	.00	10.42
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.90	1.77	.00	.00	.00	.00	.00	.00	4.67
AV. PAN FACTOR	.00	.00	.53	.55	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.16	2.78	1.38	.00	.00	.00	6.32
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.87	3.73	5.19	2.32	.00	.00	.00	.00	14.12
AV. PAN FACTOR	.00	.00	.53	.58	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.57	1.76	.00	.00	.00	.00	.00	.00	4.33
AV. PAN FACTOR	.00	.00	.53	.54	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.77	3.63	.00	.00	.00	.00	.00	.00	7.40
AV. PAN FACTOR	.00	.00	.53	.61	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.61	4.39	4.75	1.83	.00	.00	.00	11.58
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.64	.88	.82	.62	.00	.00	

RADISH	BEG 3/27		END 11/ 8									
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00
AV. PAN FACTOR	.00	.00	.53	.61	61	.00	.00	.00	.00	.00	.00	00

SPINACH	BEG 3/27		END 11/ 8									
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.95	.00	.00	.00	.00	.00	.00	.00
AV. PAN FACTOR	.00	.00	.53	.56	.74	.00	.00	.00	.00	.00	.00	.00

SPRING GRAIN	BEG 2/14		END 11/ 8									
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.71	3.61	2.98	.18	.00	.00	.00	.00	.00
AV. PAN FACTOR	.00	.65	.71	.87	.88	.64	.26	.00	.00	.00	.00	.00

TOMATO	BEG 6/ 3		END 11/ 8									
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.61	3.24	4.27	1.89	.00	.00	.00
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00

WINTER WHEAT	BEG 2/14		END 11/ 8									
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	.73	3.42	.91	.03	.00	.00	.00	.00	.00
AV. PAN FACTOR	.00	1.00	.91	.88	.85	.42	.12	.12	.12	.52	.78	1.42

SQUASH	BEG 6/29		END 11/ 8									
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.16	2.78	1.34	.00	.00	.00
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.71	.60	.00	.00

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	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	29.5	36 5	45.4	51.1	59 7	67.5	73 3	73 3	63.5	51.1	38 6	30.7	
TOTAL PRECIPITATION (IN)	1 01	1 02	.79	38	.56	.62	.26	.57	.50	.50	1.24	1.22	8.67
EFFECTIVE PRECIP (IN)	.00	.33	.53	.29	.49	.59	.25	.56	.41	.33	.26	.00	4.03

ALFALFA	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.93	7.68	10.06	8.37	5.38	1.97	.00	.00	39.41
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	76	.76	.76	

CLOVER	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.61	8.55	11.17	9.31	5.99	2.23	.00	.00	43.86
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.27	8.12	10.62	8.84	5.69	2.10	.00	.00	41.64
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.00	.80	

APPLES W/COVER	BEG 4/26		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.17	5.50	9.43	13.34	11.19	6.91	1.97	.00	.00	48.50
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 3/29		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.80	5.15	8.55	12.25	10.25	6.30	1.71	.00	.00	46.02
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 4/15		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.80	5.50	9.43	13.34	11.19	6.91	1.97	.00	.00	49.13
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.31	5.15	8.55	12.25	10.25	6.30	1.71	.00	.00	45.52
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 4/18		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.63	5.15	8.55	12.25	10.25	6.30	1.71	.00	.00	44.84
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 4/26		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	3.74	6.81	10.62	8.84	5.38	1.32	.00	.00	36.86
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

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APRICOT W/O COVER	BEG 3/29	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	00	.00	.01	1.57	3.39	5.94	9.53	7.90	3 86	1.19	.00	.00	33.39
AV. PAN FACTOR	32	32	.32	.32	.44	.60	.72	.72	56	.52	32	32	

CHERRY W/O COVER	BEG 4/15	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.69	3.74	6.81	10 62	8.84	5.38	1.32	.00	.00	37.40
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.13	3.39	5.94	9.53	7.90	3.86	1.19	.00	.00	32.94
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/18	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.54	3.39	5.94	9.53	7.90	3.86	1.19	.00	.00	32.35
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.93	5.51	8.99	7.90	4.77	1.32	.00	.00	29.41
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.86	6.81	10.08	13.54	.00	.00	.00	.00	33.29
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.86	4.64	11.71	10.72	6.91	2.36	.00	.00	39.19
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.13	6.91	9.86	12.80	10.25	4.77	.80	.00	.00	46.52
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.13	2.33	3.76	3.01	3.20	2.03	.54	.00	.00	16.00
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.73	11.51	9.74	.65	.00	.00	.00	24.62
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.86	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	00	.00	.00	2.32	8.36	8.80	.53	.00	.00	.00	20.02
AV. PAN FACTOR	00	.00	.00	.00	.00	.31	.63	80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.37	5.50	8.96	5.03	.00	.00	.00	.00	.00	20.86
AV. PAN FACTOR	.00	.00	.00	37	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.83	3.68	10.39	10.25	5.61	.28	.00	.00	31.04
AV. PAN FACTOR	.00	.00	.00	.00	.33	.39	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.83	4.57	11.90	5.79	.00	.00	.00	.00	23.09
AV. PAN FACTOR	.00	.00	.00	.00	.33	.47	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.37	5.29	7.17	.00	.00	.00	.00	.00	.00	13.83
AV. PAN FACTOR	.00	.00	.00	.37	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.25	6.63	8.33	5.33	.68	.00	.00	23.22
AV. PAN FACTOR	.00	.00	.00	.00	.00	.30	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.47	6.14	8.55	11.14	7.99	.59	.00	.00	.00	35.88
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.36	4.49	7.01	.00	.00	.00	.00	.00	.00	12.85
AV. PAN FACTOR	.00	.00	.00	.37	.56	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.50	7.00	9.78	2.31	.00	.00	.00	.00	.00	20.59
AV. PAN FACTOR	.00	.00	.00	.40	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.83	3.91	11.41	10.23	4.65	.00	.00	.00	31.03
AV. PAN FACTOR	.00	.00	.00	.00	.33	.41	.86	.92	.74	.00	.00	.00	

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RADISH	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.13	5.43	.00	.00	.00	.00	.00	.00	.00	7.56
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.37	5.33	9.42	10.75	1.00	.00	.00	.00	.00	27.88
AV. PAN FACTOR	.00	.00	.00	.37	.66	.92	.81	.31	.00	.00	.00	.00	

SORGHUM	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.32	8.47	9.78	5.76	.52	.00	.00	26.85
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.64	.88	.81	.54	.00	.00	

SOYBEANS	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.83	4.25	11.03	9.78	5.44	.20	.00	.00	31.54
AV. PAN FACTOR	.00	.00	.00	.00	.33	.44	.83	.88	.77	.43	.00	.00	

SPINACH	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.37	5.67	1.55	.00	.00	.00	.00	.00	.00	8.59
AV. PAN FACTOR	.00	.00	.00	.37	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 3/12	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.40	3.26	7.60	9.43	7.25	.00	.00	.00	.00	.00	27.94
AV. PAN FACTOR	.00	.00	.45	.61	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.36	3.77	8.45	11.25	10.19	6.03	.27	.00	.00	42.33
AV. PAN FACTOR	.00	.00	.00	.37	.48	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.36	4.65	9.32	11.69	2.41	.00	.00	.00	.00	29.43
AV. PAN FACTOR	.00	.00	.00	.37	.58	.91	.88	.47	.00	.00	.00	.00	

TOMATO	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.83	3.29	9.17	9.78	5.53	.35	.00	.00	28.95
AV. PAN FACTOR	.00	.00	.00	.00	.33	.36	.69	.88	.78	.43	.00	.00	

WINTER WHEAT	BEG 3/12	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.74	4.73	7.61	8.65	3.40	.84	.41	.95	.00	.00	27.34
AV. PAN FACTOR	.00	.00	.63	.87	.92	.85	.39	.12	.12	.45	.77	.00	

SQUASH	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.25	6.63	8.31	1.94	.00	.00	.00	19.14
AV. PAN FACTOR	.00	.00	.00	.00	.00	.30	.51	.76	.65	.00	.00	.00	

SNOQUALMIE FALL 47.55 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.1	41.9	43.2	47.9	53.7	58.6	62.9	62.5	58.1	50.9	43.8	40.2	
TOTAL PRECIPITATION (IN)	9.07	6.49	5.97	4.50	3.21	2.81	1.43	1.86	3.17	5.19	8.13	9.54	61.37
EFFECTIVE PRECIP (IN)	.08	.69	1.46	2.72	2.25	2.07	1.08	1.35	2.10	1.51	.40	.05	15.77

ALFALFA	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.37	2.18	4.18	2.95	.79	.00	.00	.00	10.47
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.81	2.93	5.10	3.71	1.30	.03	.00	.00	13.87
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF	BEG 5/10		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.66	2.68	4.79	3.46	1.13	.00	.00	.00	12.72
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER	BEG 5/ 4		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.11	3.43	6.34	4.72	1.81	.00	.00	.00	16.41
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER	BEG 5/ 4		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.93	4.49	3.20	.79	.00	.00	.00	10.41
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES	BEG 6/ 3		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.60	3.87	2.70	.45	.00	.00	.00	7.61
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.43	3.93	6.34	4.47	.79	.00	.00	.00	17.96
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.43	.78	.67	.00	.00	.00	.00	1.88
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.92	2.97	.00	.00	.00	.00	4.89
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.39	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.17	2.94	.67	.00	.00	.00	.00	.00	5.78
AV. PAN FACTOR	.00	.00	.53	.56	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.37	4.13	1.57	.00	.00	.00	9.07
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.58	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	4.48	4.16	.02	.00	.00	.00	8.66
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.98	1.04	.00	.00	.00	.00	.00	.00	3.02
AV. PAN FACTOR	.00	.00	.53	.56	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.76	2.33	.96	.00	.00	.00	5.05
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.95	2.68	4.68	1.82	.00	.00	.00	.00	11.13
AV. PAN FACTOR	.00	.00	.53	.58	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.66	1.04	.00	.00	.00	.00	.00	.00	2.69
AV. PAN FACTOR	.00	.00	.53	.54	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.81	2.42	.00	.00	.00	.00	.00	.00	5.23
AV. PAN FACTOR	.00	.00	.53	.62	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	3.91	4.22	1.39	.00	.00	.00	9.52
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.65	.88	.82	.62	.00	.00	

RADISH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEAS
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.01	.00	00	.00	.00	.00	.00	.00	
AV. PAN FACTOR	.00	.00	.53	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEAS
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.81	.00	.00	.00	.00	.00	.00	.00	
AV. PAN FACTOR	.00	.00	.53	.56	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEAS
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.48	2.66	1.95	.09	.00	.00	.00	.00	.00	5
AV. PAN FACTOR	.00	.65	.71	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/ 3		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEA
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.80	3.76	1.46	.00	.00	.00	8
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEA
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.24	.50	2.47	.00	.00	.00	.00	.00	.00	.00	3
AV. PAN FACTOR	.00	1.01	.91	.88	.85	.42	.12	.12	.12	.53	.79	1.53	

SQUASH	BEG 6/29		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEA
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	1.76	2.33	.92	.00	.00	.00	5
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.37	.58	.71	.60	.00	.00	

SPOKANE 47.63 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	25.7	32.4	37.6	45.8	54.3	61.7	69.7	68.1	59.4	47.6	34.9	29.0	
TOTAL PRECIPITATION (IN)	2.47	1.61	1.36	1.08	1.38	1.23	.50	.74	.71	1.08	2.06	2.49	16.71
EFFECTIVE PRECIP (IN)	.00	.15	.83	.75	1.02	.98	.49	.65	.53	.68	.05	.00	6.12

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.72	5.44	8.41	6.72	4.11	.22	.00	.00	26.62
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.97	6.11	9.35	7.50	4.60	.28	.00	.00	29.81
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.85	5.78	8.88	7.11	4.35	.25	.00	.00	28.21
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.57	6.79	11.23	9.05	5.33	.22	.00	.00	34.18
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.19	3.13	6.11	10.29	8.28	4.84	.16	.00	.00	33.00
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.55	6.79	11.23	9.05	5.33	.22	.00	.00	35.16
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.06	3.13	6.11	10.29	8.28	4.84	.16	.00	.00	32.87
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.06	6.11	10.29	8.28	4.84	.16	.00	.00	31.73
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.90	4.76	8.88	7.11	4.11	.07	.00	.00	25.83
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

SPOKANE

APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	1.84	4.09	7.95	6.34	2.89	.04	.00	.00	23.25
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.46	4.76	8.88	7.11	4.11	.07	.00	.00	26.39
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.84	4.09	7.95	6.34	2.89	.04	.00	.00	23.17
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.10	4.09	7.95	6.34	2.89	.04	.00	.00	22.39
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.26	7.48	6.34	3.62	.07	.00	.00	20.76
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	4.76	8.41	10.99	.00	.00	.00	.00	24.76
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.59	3.08	9.82	8.66	5.33	.31	.00	.00	27.78
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	4.43	7.13	10.76	8.28	3.62	.00	.00	.00	34.25
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.06	2.40	2.32	2.46	1.42	.00	.00	.00	9.69
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.41	6.12	8.66	2.82	.00	.00	.00	18.02
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.41	4.44	6.82	2.74	.00	.00	.00	14.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	2.00	5.95	9.24	.74	.00	.00	.00	.00	18.02
AV. PAN FACTOR	.00	.00	.00	.41	.47	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.47	6.57	8.19	4.86	.09	.00	.00	21.19
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.63	8.49	8.06	.00	.00	.00	.00	18.18
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.97	5.66	4.29	.00	.00	.00	.00	.00	12.01
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.41	3.83	5.88	4.11	.21	.00	.00	14.44
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	2.36	6.05	9.35	7.27	2.72	.00	.00	.00	27.84
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.77	5.04	4.29	.00	.00	.00	.00	.00	11.19
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	2.56	7.05	8.44	.00	.00	.00	.00	.00	18.13
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.48	7.58	8.28	4.65	.14	.00	.00	22.12
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

RADISH	BEG 4/25	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	3.01	.00	.00	.00	.00	.00	.00	.00	3.10
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 4/25	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.98	5.97	10.29	4.68	.00	.00	.00	.00	23.00
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	.00	

SORGHUM	BEG 6/21	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.41	4.45	7.26	4.84	.14	.00	.00	17.10
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

SOYBEANS	BEG 6/ 1	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.59	7.66	7.89	4.75	.05	.00	.00	21.94
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH	BEG 4/25	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	2.09	4.42	.00	.00	.00	.00	.00	.00	6.60
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 4/ 2	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.59	3.82	6.79	9.90	2.30	.00	.00	.00	.00	23.40
AV. PAN FACTOR	.00	.00	.00	.41	.75	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET	BEG 4/25	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.09	1.66	4.39	10.07	8.28	4.90	.26	.00	.00	29.65
AV. PAN FACTOR	.00	.00	.00	.41	.41	.64	.90	.92	.89	.82	.00	.00	

SUNFLOWER	BEG 4/25	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	1.79	5.50	10.29	6.34	.12	.00	.00	.00	24.13
AV. PAN FACTOR	.00	.00	.00	.41	.43	.77	.92	.72	.32	.00	.00	.00	

TOMATO	BEG 6/ 1	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.45	5.56	7.63	4.74	.03	.00	.00	19.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT	BEG 4/ 2	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.42	4.86	6.79	7.93	.70	.02	.07	.00	.00	21.79
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.50	1.54	.00	

SQUASH	BEG 6/21	END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.41	3.83	5.88	3.68	.00	.00	.00	13.80
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

SPRAGUE 47.30 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	26.5	33.8	39.0	46.6	54.7	62.0	68.7	66.8	58.7	47.7	36.2	29.9	
TOTAL PRECIPITATION (IN)	2.07	1.39	1.19	1.04	1.14	.87	.48	.69	.66	1.06	1.93	2.24	14.76
EFFECTIVE PRECIP (IN)	.00	.15	.73	.73	.84	.71	.47	60	.49	.67	.10	.00	5.50

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.85	5.73	8.24	6.57	4.06	.23	.00	.00	26.68
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.11	6.40	9.16	7.32	4.54	.29	.00	.00	29.82
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.98	6.07	8.70	6.95	4.30	.26	.00	.00	28.25
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.71	7.08	10.99	8.83	5.26	.23	.00	.00	34.10
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	3.34	6.40	10.08	8.08	4.78	.17	.00	.00	33.07
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.77	7.08	10.99	8.83	5.26	.23	.00	.00	35.17
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	3.34	6.40	10.08	8.08	4.78	.17	.00	.00	32.92
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.26	6.40	10.08	8.08	4.78	.17	.00	.00	31.77
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.03	5.05	8.70	6.95	4.06	.08	.00	.00	25.87
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/16		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	2.03	4.37	7.78	6.19	2.86	.05	.00	.00	23.44
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.68	5.05	8.70	6.95	4.06	.08	.00	.00	26.51
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	2.03	4.37	7.78	6.19	2.86	.05	.00	.00	23.34
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.29	4.37	7.78	6.19	2.86	.05	.00	.00	22.55
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.61	7.32	6.19	3.58	.08	.00	.00	20.79
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.71	5.05	8.24	10.72	.00	.00	.00	.00	24.73
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.71	3.36	9.62	8.46	5.26	.32	.00	.00	27.72
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	4.65	7.42	10.53	8.08	3.58	.00	.00	.00	34.31
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.05	1.25	2.68	2.28	2.42	1.43	.00	.00	.00	10.10
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.51	5.99	8.45	2.81	.00	.00	.00	17.76
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.51	4.35	6.66	2.72	.00	.00	.00	14.24
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	2.18	6.24	9.05	.72	.00	.00	.00	.00	18.29
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.81	6.44	8.00	4.80	.10	.00	.00	21.15
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.89	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.97	8.31	7.87	.00	.00	.00	.00	18.15
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	2.15	5.94	4.20	.00	.00	.00	.00	.00	12.40
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.51	3.75	5.74	4.06	.22	.00	.00	14.29
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	2.54	6.34	9.16	7.10	2.70	.00	.00	.00	27.94
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	1.95	5.32	4.20	.00	.00	.00	.00	.00	11.57
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	2.74	7.34	8.27	.00	.00	.00	.00	.00	18.45
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.82	7.42	8.08	4.59	.15	.00	.00	22.06
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

SPRAGUE

ADISH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	3.21	.00	.00	.00	.00	.00	.00	.00	3.31
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

AFFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	2.16	6.25	10.08	4.58	.00	.00	.00	.00	23.16
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	.00	

ORGHUM — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.51	4.36	7.09	4.78	.15	.00	.00	16.89
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

OYBEANS — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.93	7.50	7.70	4.69	.06	.00	.00	21.88
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

PINACH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	2.28	4.74	.00	.00	.00	.00	.00	.00	7.11
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

PRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.65	4.02	7.08	9.70	2.25	.00	.00	.00	.00	23.71
AV. PAN FACTOR	.00	.00	.00	.41	.74	.92	.89	.43	.00	.00	.00	.00	

UGAR BEET — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.10	1.84	4.66	9.86	8.08	4.84	.27	.00	.00	29.65
AV. PAN FACTOR	.00	.00	.00	.41	.41	.63	.90	.92	.89	.82	.00	.00	

UNFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	1.96	5.78	10.08	6.19	.12	.00	.00	.00	24.24
AV. PAN FACTOR	.00	.00	.00	.41	.43	.77	.92	.72	.32	.00	.00	.00	

OMATO — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.79	5.45	7.45	4.69	.04	.00	.00	19.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

INTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.51	5.08	7.08	7.76	.69	.06	.09	.00	.00	22.28
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.50	1.16	.00	

QUASH — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.51	3.75	5.74	3.65	.00	.00	.00	13.66
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

SUNNYSIDE 46.32 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	31.2	38.4	44.4	51.7	59.8	66.9	72.2	70.4	63.1	52.1	40.4	34.0	
TOTAL PRECIPITATION (IN)	1.03	.58	.42	.51	.53	.45	.20	.30	.37	.49	.83	.99	6.70
EFFECTIVE PRECIP (IN)	.00	.23	.27	.38	.45	.42	.20	.28	.29	.32	.16	.00	3.00

ALFALFA	BEG 4/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.76	5.91	7.26	9.16	7.44	4.77	1.72	.00	.00	37.01
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 4/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.85	6.59	8.06	10.14	8.25	5.30	1.94	.00	.00	41.13
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 4/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.81	6.25	7.66	9.65	7.84	5.03	1.83	.00	.00	39.07
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 4/20		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.46	5.24	8.87	12.11	9.87	6.10	1.72	.00	.00	44.37
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 3/23		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.16	1.67	4.91	8.06	11.13	9.06	5.57	1.49	.00	.00	42.04
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 4/ 9		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.02	5.24	8.87	12.11	9.87	6.10	1.72	.00	.00	44.94
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 3/31		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.49	4.91	8.06	11.13	9.06	5.57	1.49	.00	.00	41.70
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 4/12		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.87	4.91	8.06	11.13	9.06	5.57	1.49	.00	.00	41.09
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 4/20		END 10/27										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.39	3.57	6.45	9.65	7.84	4.77	1.15	.00	.00	33.82
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

SUNNYSIDE

APRICOT W/O COVER	BEG 3/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.13	1.44	3.23	5.64	8.66	7.03	3.43	1.04	.00	.00	30.62
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/ 9	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.87	3.57	6.45	9.65	7.84	4.77	1.15	.00	.00	34.30
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 3/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.27	3.23	5.64	8.66	7.03	3.43	1.04	.00	.00	30.31
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/12	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.74	3.23	5.64	8.66	7.03	3.43	1.04	.00	.00	29.79
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.52	5.24	8.17	7.03	4.23	1.15	.00	.00	27.35
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	2.90	6.45	9.16	11.90	.00	.00	.00	.00	30.76
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.35	2.90	4.43	10.63	9.47	6.10	2.06	.00	.00	35.93
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.44	6.59	9.27	11.62	9.06	4.23	.70	.00	.00	42.91
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.44	2.23	3.62	2.76	2.97	1.84	.48	.00	.00	15.33
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.47	11.00	7.96	.23	.00	.00	.00	22.65
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.91	.81	.31	.00	.00	.00	

GREEN BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.83	8.23	7.50	.00	.00	.00	.00	18.56
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.68	.79	.00	.00	.00	.00	

CARROTS	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.33	6.15	8.22	2.42	.00	.00	.00	.00	.00	19.12
AV. PAN FACTOR	.00	.00	.45	.48	.79	.86	.69	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.39	4.38	10.38	9.06	4.10	.00	.00	.00	29.31
AV. PAN FACTOR	.00	.00	.00	.00	.33	.47	.86	.92	.69	.00	.00	.00	

SWEET CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.39	5.72	11.12	2.79	.00	.00	.00	.00	21.02
AV. PAN FACTOR	.00	.00	.00	.00	.33	.61	.92	.88	.00	.00	.00	.00	

CRUCIFER	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.31	5.89	4.88	.00	.00	.00	.00	.00	.00	13.08
AV. PAN FACTOR	.00	.00	.45	.47	.76	.81	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.65	6.72	7.44	4.66	.46	.00	.00	21.91
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.56	.76	.74	.64	.00	.00	

DRY ONION	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.52	6.38	8.06	10.00	6.24	.00	.00	.00	.00	33.20
AV. PAN FACTOR	.00	.00	.45	.51	.81	.84	.83	.71	.00	.00	.00	.00	

GREEN ONION	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.22	5.27	4.83	.00	.00	.00	.00	.00	.00	12.32
AV. PAN FACTOR	.00	.00	.45	.46	.68	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.62	7.32	8.73	.00	.00	.00	.00	.00	.00	18.67
AV. PAN FACTOR	.00	.00	.45	.53	.93	.94	.00	.00	.00	.00	.00	.00	

POTATO	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.39	4.85	10.99	8.85	2.72	.00	.00	.00	28.80
AV. PAN FACTOR	.00	.00	.00	.00	.33	.52	.91	.90	.70	.00	.00	.00	

RADISH — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	00	.00	.00	3.06	.81	.00	.00	.00	.00	.00	.00	.00	3.86
AV. PAN FACTOR	.00	.00	.45	.60	.66	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.32	6.13	8.87	8.21	.17	.00	.00	.00	.00	25.69
AV. PAN FACTOR	.00	.00	.45	.47	.79	.92	.68	.21	.00	.00	.00	.00	

SORGHUM — BEG 5/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.83	8.46	8.66	4.85	.33	.00	.00	25.13
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.70	.88	.77	.51	.00	.00	

SOYBEANS — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.39	5.16	10.52	8.66	3.86	.00	.00	.00	29.59
AV. PAN FACTOR	.00	.00	.00	.00	.33	.55	.87	.88	.66	.00	.00	.00	

SPINACH — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.36	5.63	.00	.00	.00	.00	.00	.00	.00	7.99
AV. PAN FACTOR	.00	.00	.45	.48	.76	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/ 4 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.84	3.83	7.26	8.66	3.97	.00	.00	.00	.00	.00	24.56
AV. PAN FACTOR	.00	.00	.45	.74	.92	.90	.45	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.19	4.69	8.53	11.13	8.92	4.68	.00	.00	.00	40.13
AV. PAN FACTOR	.00	.00	.45	.45	.61	.89	.92	.91	.84	.00	.00	.00	

SUNFLOWER — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.22	5.63	8.87	9.66	.92	.00	.00	.00	.00	27.30
AV. PAN FACTOR	.00	.00	.45	.46	.73	.92	.80	.38	.00	.00	.00	.00	

TOMATO — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.39	3.78	9.44	8.66	4.16	.09	.00	.00	27.52
AV. PAN FACTOR	.00	.00	.00	.00	.33	.42	.78	.88	.67	.36	.00	.00	

WINTER WHEAT — BEG 3/ 4 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	1.44	4.77	7.26	7.10	1.47	.92	.43	.96	.00	.00	24.35
AV. PAN FACTOR	.00	.00	.68	.91	.92	.74	.30	.12	.12	.45	.73	.00	

SQUASH — BEG 5/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.65	6.72	7.31	1.25	.00	.00	.00	17.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.56	.75	.68	.00	.00	.00	

(WA210-VI-WAIG, OCTOBER 1985)

TACOMA 47.25 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	40.3	43.8	45.2	49.8	55.8	60.6	65.0	64.7	60.7	53.5	45.7	42.0	
TOTAL PRECIPITATION (IN)	5.74	4.06	3.38	2.49	1.48	1.31	.75	1.25	1.95	3.27	5.47	6.02	37.17
EFFECTIVE PRECIP (IN)	.18	.80	1.59	1.68	1.09	.97	.61	.93	1.36	1.64	.49	.13	11.46

ALFALFA BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.62	3.47	4.87	3.58	1.73	.00	.00	.00	15.28
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.08	4.25	5.83	4.38	2.28	.08	.00	.00	18.90
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/10 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.93	3.99	5.51	4.11	2.10	.00	.00	.00	17.64
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.72	4.78	7.12	5.44	2.82	.00	.00	.00	21.88
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 5/ 4 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.93	3.21	5.19	3.85	1.73	.00	.00	.00	14.91
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 6/ 3 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.03	4.55	3.32	1.37	.00	.00	.00	11.26
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.85	5.30	7.12	5.17	1.73	.00	.00	.00	23.18
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/27 END 11/ 8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.79	1.64	1.32	1.19	.10	.00	.00	.00	5.05
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.48	3.59	1.34	.00	.00	.00	7.42
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.38	.68	.75	.00	.00	.00	

CARROTS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	3.55	4.26	.85	.00	.00	.00	.00	.00	9.11
AV. PAN FACTOR	.00	.00	.52	.55	.79	.80	.64	.00	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.89	4.00	4.82	2.57	.00	.00	.00	12.28
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.57	.87	.86	.60	.00	.00	

SWEET CORN	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.95	5.17	4.85	.11	.00	.00	.00	11.10
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.72	.87	.81	.00	.00	.00	

CRUCIFER	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.44	3.36	1.96	.00	.00	.00	.00	.00	.00	5.75
AV. PAN FACTOR	.00	.00	.52	.54	.76	.76	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/29	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.32	2.91	1.91	.00	.00	.00	7.15
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.72	.70	.59	.00	

DRY ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.54	3.33	3.99	5.39	2.47	.00	.00	.00	.00	15.73
AV. PAN FACTOR	.00	.00	.52	.57	.75	.76	.75	.65	.00	.00	.00	.00	

GREEN ONION	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.37	3.01	1.95	.00	.00	.00	.00	.00	.00	5.32
AV. PAN FACTOR	.00	.00	.52	.53	.70	.76	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/27	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.67	4.24	3.94	.00	.00	.00	.00	.00	.00	8.86
AV. PAN FACTOR	.00	.00	.52	.60	.91	.90	.00	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 3	END 11/ 8											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.89	4.57	4.91	2.38	.00	.00	.00	12.75
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.64	.88	.82	.62	.00	.00	

RADISH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.69	.13	.00	.00	.00	.00	.00	.00	.00	.83
AV. PAN FACTOR	.00	.00	.52	.61	.61	.00	.00	.00	.00	.00	.00	.00	

SPINACH	BEG 3/27		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.47	2.51	.00	.00	.00	.00	.00	.00	.00	2.97
AV. PAN FACTOR	.00	.00	.52	.55	.74	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.72	4.08	3.24	.21	.00	.00	.00	.00	.00	9.26
AV. PAN FACTOR	.00	.63	.68	.87	.88	.64	.26	.00	.00	.00	.00	.00	

TOMATO	BEG 6/ 3		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.89	3.41	4.42	2.45	.00	.00	.00	11.17
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.50	.81	.84	.55	.00	.00	

WINTER WHEAT	BEG 2/14		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.25	1.75	3.89	1.18	.22	.00	.00	.00	.00	.00	7.28
AV. PAN FACTOR	.00	.94	.90	.88	.85	.42	.12	.12	.12	.51	.74	1.13	

SQUASH	BEG 6/29		END 11/ 8										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.00	2.32	2.91	1.87	.00	.00	.00	7.11
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.36	.58	.71	.60	.00	.00	

VANCOUVER 45.68 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	38.2	42 4	45.1	49.7	55.8	61.0	65.7	65.3	61.5	53.2	44.8	40.3	
TOTAL PRECIPITATION (IN)	6.71	4.34	3.81	2.61	2.24	1.62	.57	1.22	1.88	3.46	5.61	7.00	41.07
EFFECTIVE PRECIP (IN)	.09	.63	1.29	1.71	1.61	1 19	.47	.89	1.32	1.62	.37	.00	11.19

ALFALFA BEG 5/ 3 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.10	2.97	4.76	3.15	1.98	.00	.00	.00	13.96
AV. PAN FACTOR	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	.68	

CLOVER BEG 5/ 3 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.64	3.71	5.69	3.86	2.56	.03	.00	.00	17.49
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

PASTURE/TURF BEG 5/ 3 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.46	3.46	5.38	3.62	2.36	.00	.00	.00	16.29
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

APPLES W/COVER BEG 4/27 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.48	4.19	6.92	4.81	3.14	.00	.00	.00	20.54
AV. PAN FACTOR	.40	.40	.40	.40	.60	.88	.96	.96	.92	.72	.40	.40	

APPLE W/O COVER BEG 4/27 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.66	2.73	5.07	3.38	1.98	.00	.00	.00	13.82
AV. PAN FACTOR	.36	.36	.36	.36	.44	.64	.72	.72	.68	.52	.36	.36	

GRAPES BEG 5/28 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.24	4.45	2.91	1.59	.00	.00	.00	11.19
AV. PAN FACTOR	.40	.40	.40	.40	.40	.56	.64	.64	.60	.48	.40	.40	

RASPBERRY BEG 3/19 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.72	4.68	6.92	4.57	1.98	.00	.00	.00	20.87
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY BEG 3/19 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.04	1.26	1.38	1.01	.23	.00	.00	.00	3.92
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

GREEN BEANS	BEG 6/25	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.08	2.70	3.34	1.38	.00	.00	.00	7.51
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.41	.71	.74	.00	.00	.00	

CARROTS	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.49	2.66	2.79	.00	.00	.00	.00	.00	.00	5.94
AV. PAN FACTOR	.00	.00	.55	.62	.83	.75	.00	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/28	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.25	4.65	4.33	2.71	.00	.00	.00	12.94
AV. PAN FACTOR	.00	.00	.00	.00	.39	.40	.66	.88	.83	.56	.00	.00	

SWEET CORN	BEG 5/28	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.43	5.64	3.41	.00	.00	.00	.00	10.48
AV. PAN FACTOR	.00	.00	.00	.00	.39	.43	.79	.87	.00	.00	.00	.00	

CRUCIFER	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	2.45	.71	.00	.00	.00	.00	.00	.00	3.62
AV. PAN FACTOR	.00	.00	.55	.61	.79	.70	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/25	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.08	2.46	2.78	2.17	.00	.00	.00	7.49
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.38	.62	.72	.68	.57	.00	

DRY ONION	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.57	2.31	3.46	5.12	1.40	.00	.00	.00	.00	12.85
AV. PAN FACTOR	.00	.00	.55	.65	.76	.76	.73	.63	.00	.00	.00	.00	

GREEN ONION	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.34	2.20	.73	.00	.00	.00	.00	.00	.00	3.27
AV. PAN FACTOR	.00	.00	.55	.58	.74	.71	.00	.00	.00	.00	.00	.00	

PEAS	BEG 3/19	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.82	3.13	2.28	.00	.00	.00	.00	.00	.00	6.24
AV. PAN FACTOR	.00	.00	.55	.72	.92	.89	.00	.00	.00	.00	.00	.00	

POTATO	BEG 5/28	END 11/12											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.27	5.22	4.33	2.45	.00	.00	.00	13.28
AV. PAN FACTOR	.00	.00	.00	.00	.39	.40	.74	.88	.78	.59	.00	.00	

RADISH BEG 3/19 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.51	.00	.00	.00	.00	.00	.00	.00	.00	.51
AV. PAN FACTOR	.00	.00	.57	.63	.00	.00	.00	.00	.00	.00	.00	.00	

SPINACH BEG 3/19 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.51	1.01	.00	.00	.00	.00	.00	.00	.00	1.52
AV. PAN FACTOR	.00	.00	.55	.63	.75	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN BEG 2/12 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.39	2.93	2.51	.12	.00	.00	00	.00	.00	6.95
AV. PAN FACTOR	.00	.67	.73	.83	.88	.60	.23	.00	.00	.00	.00	00	

TOMATO BEG 5/28 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.19	4.04	4.04	2.64	.00	.00	.00	11.91
AV. PAN FACTOR	.00	.00	.00	.00	.39	.39	.59	.83	.82	.50	.00	.00	

WINTER WHEAT BEG 2/12 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.22	1.40	2.68	.62	.35	.00	.00	.00	.00	.00	5.27
AV. PAN FACTOR	.00	1.05	.92	.88	.83	.40	.12	.12	.12	.52	.81	3.17	

SQUASH BEG 6/25 END 11/12

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.08	2.46	2.78	2.07	.00	.00	.00	7.39
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.38	.62	.70	.58	.00	.00	

WALLA WALLA 46.03 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	34.3	40.7	45.8	52.3	60.1	67.6	75.5	73.6	65.5	54.3	42.5	37.2	
TOTAL PRECIPITATION (IN)	2.12	1.40	1.41	1.35	1.40	.93	.35	.71	.83	1.40	1.87	2.19	15.96
EFFECTIVE PRECIP (IN)	.00	.44	.91	.97	1.06	.79	.34	.67	.64	.92	.37	.00	7.12

ALFALFA	BEG 5/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.72	6.46	9.74	7.53	4.71	.69	.00	.00	32.85
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 5/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.24	7.23	10.80	8.40	5.27	.86	.00	.00	36.80
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 5/ 4	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.98	6.85	10.27	7.96	4.99	.77	.00	.00	34.83
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 4/29	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.17	7.99	12.93	10.12	6.12	.69	.00	.00	42.01
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 3/29	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.88	3.86	7.23	11.87	9.26	5.55	.51	.00	.00	39.15
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 4/17	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.20	4.17	7.99	12.93	10.12	6.12	.69	.00	.00	42.21
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/ 7	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.37	3.86	7.23	11.87	9.26	5.55	.51	.00	.00	38.64
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 4/20	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.15	3.86	7.23	11.87	9.26	5.55	.51	.00	.00	38.42
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 4/29	END 10/22											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.63	5.70	10.27	7.96	4.71	.24	.00	.00	31.52
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

WALLA WALLA

APRICOT W/O COVER	BEG 3/29		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.67	2.32	4.94	9.21	7.10	3.30	.16	.00	.00	27.70
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/17		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.63	5.70	10.27	7.96	4.71	.24	.00	.00	31.64
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 7		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.21	2.32	4.94	9.21	7.10	3.30	.16	.00	.00	27.24
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/20		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	2.32	4.94	9.21	7.10	3.30	.16	.00	.00	27.12
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/23		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.31	4.55	8.68	7.10	4.15	.24	.00	.00	25.03
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	5.70	9.74	12.28	.00	.00	.00	.00	29.13
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.40	3.79	11.33	9.69	6.12	.95	.00	.00	33.28
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.24	5.40	8.37	12.40	9.26	4.15	.00	.00	.00	39.81
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 4		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.24	1.40	3.03	2.84	2.79	1.61	.00	.00	.00	11.91
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/11		END 10/22										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.30	9.73	9.53	1.38	.00	.00	.00	21.95
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.76	.95	.51	.00	.00	.00	

GREEN BEANS — BEG 6/11 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.26	6.77	7.96	1.55	.00	.00	.00	17.54
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.54	.80	.78	.00	.00	.00	

CARROTS — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.56	4.42	7.54	4.18	.00	.00	.00	.00	.00	16.70
AV. PAN FACTOR	.00	.00	.00	.39	.71	.87	.72	.00	.00	.00	.00	.00	

FIELD CORN — BEG 5/23 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.28	2.81	9.45	9.26	5.21	.12	.00	.00	27.13
AV. PAN FACTOR	.00	.00	.00	.00	.34	.38	.74	.92	.83	.56	.00	.00	

SWEET CORN — BEG 5/23 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.28	3.37	11.17	6.40	.00	.00	.00	.00	21.22
AV. PAN FACTOR	.00	.00	.00	.00	.34	.44	.87	.90	.00	.00	.00	.00	

CRUCIFER — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.55	4.22	5.48	.00	.00	.00	.00	.00	.00	10.26
AV. PAN FACTOR	.00	.00	.00	.39	.69	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER — BEG 6/11 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.26	5.43	7.27	4.71	.46	.00	.00	19.13
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.44	.74	.76	.68	.00	.00	

DRY ONION — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.68	4.89	7.23	10.75	7.13	.25	.00	.00	.00	30.92
AV. PAN FACTOR	.00	.00	.00	.42	.77	.84	.84	.72	.65	.00	.00	.00	

GREEN ONION — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.52	3.55	5.37	.00	.00	.00	.00	.00	.00	9.43
AV. PAN FACTOR	.00	.00	.00	.38	.60	.80	.00	.00	.00	.00	.00	.00	

PEAS — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.72	5.68	8.27	1.48	.00	.00	.00	.00	.00	16.15
AV. PAN FACTOR	.00	.00	.00	.43	.88	.95	.89	.00	.00	.00	.00	.00	

POTATO — BEG 5/23 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.28	2.92	10.53	9.26	4.78	.02	.00	.00	27.79
AV. PAN FACTOR	.00	.00	.00	.00	.34	.39	.82	.92	.77	.61	.00	.00	

RADISH — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.28	4.09	.00	.00	.00	.00	.00	.00	.00	5.37
AV. PAN FACTOR	.00	.00	.00	.56	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.55	4.31	7.99	9.99	.60	.00	.00	.00	.00	23.44
AV. PAN FACTOR	.00	.00	.00	.39	.70	.92	.78	.28	.00	.00	.00	.00	

SORGHUM — BEG 6/11 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.26	6.76	8.73	5.38	.28	.00	.00	22.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.54	.87	.86	.59	.00	.00	

SOYBEANS — BEG 5/23 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.28	3.19	10.27	8.83	5.07	.03	.00	.00	27.67
AV. PAN FACTOR	.00	.00	.00	.00	.34	.42	.80	.88	.81	.47	.00	.00	

SPINACH — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.57	4.51	.65	.00	.00	.00	.00	.00	.00	5.72
AV. PAN FACTOR	.00	.00	.00	.40	.72	.60	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.86	6.01	7.79	4.18	.00	.00	.00	.00	.00	20.85
AV. PAN FACTOR	.00	.00	.47	.75	.92	.90	.45	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.52	2.90	7.31	11.87	9.18	5.29	.07	.00	.00	37.13
AV. PAN FACTOR	.00	.00	.00	.38	.51	.85	.92	.91	.84	.80	.00	.00	

SUN-LOWER — BEG 4/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.52	3.72	7.95	11.08	1.72	.00	.00	.00	.00	24.99
AV. PAN FACTOR	.00	.00	.00	.38	.62	.92	.86	.45	.00	.00	.00	.00	

TOMATO — BEG 5/23 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.28	2.59	8.22	8.82	5.12	.03	.00	.00	25.06
AV. PAN FACTOR	.00	.00	.00	.00	.34	.35	.65	.88	.82	.47	.00	.00	

WINTER WHEAT — BEG 3/ 4 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.49	3.68	6.01	6.32	1.53	.58	.01	.01	.00	.00	18.64
AV. PAN FACTOR	.00	.00	.70	.91	.92	.74	.30	.12	.12	.45	.78	.00	

SQUASH — BEG 6/11 — END 10/22

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.26	5.43	7.27	2.73	.00	.00	.00	16.69
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.44	.74	.70	.00	.00	.00	

WAPATO 46.43 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	31.0	38.5	44.7	52.6	61.3	68.3	74.7	72.6	64.4	52.6	40.2	33.8	
TOTAL PRECIPITATION (IN)	1.20	.64	.56	.51	.45	.53	.19	.36	.34	.43	.93	1.10	7.24
EFFECTIVE PRECIP (IN)	.00	.23	.37	.38	.39	.49	.19	.34	.27	.28	.15	.00	3.11

ALFALFA BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	6.20	7.39	9.59	7.70	4.94	1.81	.00	.00	38.41
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.88	6.89	8.22	10.62	8.55	5.49	2.04	.00	.00	42.68
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.83	6.55	7.81	10.10	8.12	5.21	1.92	.00	.00	40.55
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 4/20 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.48	5.50	9.05	12.67	10.24	6.31	1.81	.00	.00	46.07
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 3/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.13	1.72	5.16	8.22	11.65	9.39	5.76	1.58	.00	.00	43.61
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/ 9 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.06	5.50	9.05	12.67	10.24	6.31	1.81	.00	.00	46.65
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 3/31 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.54	5.16	8.22	11.65	9.39	5.76	1.58	.00	.00	43.30
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 4/12 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.90	5.16	8.22	11.65	9.39	5.7(
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.8(

APPLES W/O COVER BEG 4/20 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.41	3.77	6.56	10.10	8.12	4.94
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.7(

APRICOT W/O COVER	BEG 3/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.10	1.48	3.42	5.73	9.07	7.28	3.57	1.12	.00	.00	31.78
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/ 9	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.91	3.77	6.56	10.10	8.12	4.94	1.23	.00	.00	35.63
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 3/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.31	3.42	5.73	9.07	7.28	3.57	1.12	.00	.00	31.50
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/12	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.77	3.42	5.73	9.07	7.28	3.57	1.12	.00	.00	30.96
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.64	5.32	8.56	7.28	4.39	1.23	.00	.00	28.41
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.37	3.08	6.56	9.59	12.35	.00	.00	.00	.00	31.95
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.37	3.08	4.49	11.13	9.62	6.31	2.15	.00	.00	37.34
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.48	6.89	9.47	12.16	9.39	4.39	.77	.00	.00	44.56
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.48	2.38	3.66	2.90	3.04	1.92	.54	.00	.00	15.93
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.48	11.51	8.24	.24	.00	.00	.00	23.46
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.91	.81	.31	.00	.00	.00	

GREEN BEANS — BEG 5/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.82	8.61	7.77	.00	.00	.00	.00	19.20
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.68	.79	.00	.00	.00	.00	

CARROTS — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.38	6.44	8.39	2.54	.00	.00	.00	.00	.00	19.75
AV. PAN FACTOR	.00	.00	.45	.47	.79	.86	.69	.00	.00	.00	.00	.00	

FIELD CORN — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.48	4.40	10.86	9.39	4.26	.00	.00	.00	30.40
AV. PAN FACTOR	.00	.00	.00	.00	.33	.47	.86	.92	.69	.00	.00	.00	

SWEET CORN — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.48	5.79	11.64	2.89	.00	.00	.00	.00	21.80
AV. PAN FACTOR	.00	.00	.00	.00	.33	.61	.92	.88	.00	.00	.00	.00	

CRUCIFER — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.37	6.17	4.98	.00	.00	.00	.00	.00	.00	13.52
AV. PAN FACTOR	.00	.00	.45	.47	.76	.81	.00	.00	.00	.00	.00	.00	

CUCUMBER — BEG 5/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.63	7.02	7.70	4.83	.48	.00	.00	22.66
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.56	.76	.74	.64	.00	.00	

DRY ONION — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.59	6.67	8.22	10.47	6.46	.00	.00	.00	.00	34.41
AV. PAN FACTOR	.00	.00	.45	.51	.81	.84	.83	.71	.00	.00	.00	.00	

GREEN ONION — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.27	5.5
AV. PAN FACTOR	.00	.00	.45	.46	.6

PEAS — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MA
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.69	7.6
AV. PAN FACTOR	.00	.00	.45	.53	.9

POTATO — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MA
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.4
AV. PAN FACTOR	.00	.00	.00	.00	.3

RADISH — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	3.14	.85	.00	.00	.00	.00	.00	.00	.00	3.99
AV. PAN FACTOR	.00	.00	.45	.60	.66	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.38	6.41	9.05	8.59	.18	.00	.00	.00	.00	26.61
AV. PAN FACTOR	.00	.00	.45	.47	.78	.92	.68	.21	.00	.00	.00	.00	

SORGHUM — BEG 5/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.82	8.85	8.97	5.02	.36	.00	.00	26.02
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.70	.88	.77	.51	.00	.00	

SOYBEANS — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.48	5.22	11.01	8.97	4.02	.00	.00	.00	30.70
AV. PAN FACTOR	.00	.00	.00	.00	.33	.55	.87	.88	.66	.00	.00	.00	

SPINACH — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.42	5.92	.00	.00	.00	.00	.00	.00	.00	8.34
AV. PAN FACTOR	.00	.00	.45	.48	.76	.00	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/ 4 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.74	3.93	7.59	8.84	4.17	.00	.00	.00	.00	.00	25.26
AV. PAN FACTOR	.00	.00	.45	.74	.92	.90	.45	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.25	4.92	8.70	11.65	9.24	4.85	.00	.00	.00	41.60
AV. PAN FACTOR	.00	.00	.45	.45	.61	.89	.92	.91	.84	.00	.00	.00	

SUNFLOWER — BEG 3/30 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.28	5.90	9.05	10.11	.95	.00	.00	.00	.00	28.29
AV. PAN FACTOR	.00	.00	.45	.46	.73	.92	.80	.38	.00	.00	.00	.00	

TOMATO — BEG 5/11 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.48	3.79	9.87	8.97	4.32	.10	.00	.00	28.53
AV. PAN FACTOR	.00	.00	.00	.00	.33	.41	.78	.88	.67	.36	.00	.00	

WINTER WHEAT — BEG 3/ 4 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	1.34	4.90	7.59	7.24	1.54	.91	.48	1.04	.00	.00	25.04
AV. PAN FACTOR	.00	.00	.68	.91	.92	.74	.30	.12	.12	.45	.74	.00	

SQUASH — BEG 5/31 — END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.63	7.02	7.57	1.30	.00	.00	.00	18.52
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.56	.75	.68	.00	.00	.00	

WATERVILLE 47.65 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	22.3	29.3	35.6	44.8	53.4	60.4	67.5	66.3	58.3	46.4	33.3	25.2	
TOTAL PRECIPITATION (IN)	1.50	.91	.73	76	.82	.77	.30	.76	.51	.72	1.39	1.70	10.87
EFFECTIVE PRECIP (IN)	.00	.00	.44	.53	.61	.63	.29	.65	.39	.45	.00	.00	3.98

ALFALFA	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.93	5.61	8.25	6.46	4.12	.30	.00	.00	26.68
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.18	6.26	9.15	7.21	4.60	.36	.00	.00	29.76
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.06	5.94	8.70	6.84	4.36	.33	.00	.00	28.22
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.80	6.92	10.95	8.71	5.31	.30	.00	.00	34.00
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 4/16		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.31	3.45	6.26	10.05	7.96	4.83	.25	.00	.00	33.11
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 5/ 4		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.93	6.92	10.95	8.71	5.31	.30	.00	.00	35.12
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	3.45	6.26	10.05	7.96	4.83	.25	.00	.00	32.90
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.40	6.26	10.05	7.96	4.83	.25	.00	.00	31.76
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 5/14		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.15	4.95	8.70	6.84	4.12	.16	.00	.00	25.92
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

WATERVILLE

APRICOT W/O COVER	BEG 4/16		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.24	2.18	4.29	7.80	6.09	2.94	.13	.00	.00	23.67
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.86	4.95	8.70	6.84	4.12	.16	.00	.00	26.64
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	2.18	4.29	7.80	6.09	2.94	.13	.00	.00	23.51
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.46	4.29	7.80	6.09	2.94	.13	.00	.00	22.72
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.57	7.35	6.09	3.65	.16	.00	.00	20.82
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.83	4.95	8.25	10.58	.00	.00	.00	.00	24.62
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.83	3.31	9.60	8.33	5.31	.39	.00	.00	27.77
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	4.72	7.25	10.50	7.96	3.65	.05	.00	.00	34.20
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.42	2.65	2.41	2.34	1.51	.00	.00	.00	10.41
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.52	6.07	8.33	2.90	.00	.00	.00	17.82
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.57	.96	.67	.00	.00	.00	

WATERVILLE

GREEN BEANS — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.52	4.47	6.55	2.78	.00	.00	.00	14.33
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	00	

CARROTS — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.37	6.11	9.05	.70	.00	.00	.00	.00	18.35
AV. PAN FACTOR	.00	.00	.00	.41	.47	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.85	6.50	7.88	4.85	.18	.00	.00	21.27
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.60	.91	.88	.59	.00	.00	

SWEET CORN — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.00	8.33	7.73	.00	.00	.00	.00	18.07
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.77	.91	.00	.00	.00	.00	

CRUCIFER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.34	5.83	4.21	.00	.00	.00	.00	.00	12.49
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.52	3.88	5.65	4.12	.30	.00	.00	14.48
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.71	6.21	9.15	6.99	2.78	.00	.00	.00	27.96
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.14
AV. PAN FACTOR	.00	.00	.00	.41	.43

PEAS — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.90	7.17	8.25	.00	.00	.00	.00	.00	18.45
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.85	7.46	7.96	4.65	.23	.00	.00	22.16
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.69	.92	.85	.65	.00	.00	

WATERVILLE

RADISH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	3.33	.00	.00	.00	.00	.00	.00	.00	3.46
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.34	6.13	10.05	4.48	.00	.00	.00	.00	23.12
AV. PAN FACTOR	.00	.00	.00	.41	.47	.82	.92	.59	.00	.00	.00	.00	

SORGHUM — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.52	4.47	6.98	4.83	.23	.00	.00	17.04
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

SOYBEANS — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.97	7.54	7.59	4.75	.14	.00	.00	21.98
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.46	4.65	.00	.00	.00	.00	.00	.00	7.23
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.84	4.13	6.92	9.68	2.19	.00	.00	.00	.00	23.75
AV. PAN FACTOR	.00	.00	.00	.41	.75	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.12	2.04	4.61	9.85	7.96	4.89	.34	.00	.00	29.82
AV. PAN FACTOR	.00	.00	.00	.41	.42	.64	.90	.92	.89	.82	.00	.00	

SUNFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.16	5.68	10.05	6.09	.14	.00	.00	.00	24.24
AV. PAN FACTOR	.00	.00	.00	.41	.44	.77	.92	.72	.32	.00	.00	.00	

TOMATO — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.83	5.54	7.34	4.74	.12	.00	.00	19.57
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.65	5.14	6.92	7.78	.66	.20	.39	.00	.00	22.73
AV. PAN FACTOR	.00	.00	.00	.64	.91	.92	.72	.28	.12	.51	.00	.00	

SQUASH — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.52	3.88	5.65	3.76	.00	.00	.00	13.82
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

WELLPINIT + 47.90 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	26.9	31.3	38.9	45.7	53.0	61.1	67.3	67.8	58.5	46.3	33.6	26.6	
TOTAL PRECIPITATION (IN)	2.50	1.75	1.52	1.48	1.74	1.09	.73	1.04	.89	1.23	2.47	2.98	19.42
EFFECTIVE PRECIP (IN)	.00	.10	.93	1.03	1.27	.87	.71	.89	.65	.76	.00	.00	7.20

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.47	5.48	7.83	6.45	3.88	.13	.00	.00	25.26
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.71	6.15	8.73	7.23	4.36	.19	.00	.00	28.37
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.59	5.81	8.28	6.84	4.12	.16	.00	.00	26.81
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.31	6.82	10.53	8.77	5.08	.13	.00	.00	32.64
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.02	2.75	6.15	9.63	8.00	4.60	.08	.00	.00	31.23
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.13	6.82	10.53	8.77	5.08	.13	.00	.00	33.45
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.01	2.75	6.15	9.63	8.00	4.60	.08	.00	.00	31.22
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.69	6.15	9.63	8.00	4.60	.08	.00	.00	30.15
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.66
AV. PAN FACTOR	.32	.32	.32	.32	.48

APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.50	4.14	7.38	6.07	2.69	.00	.00	.00	21.78
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	00	.00	.00	.00	1.07	4.81	8.28	6 84	3.88	.00	.00	.00	24.89
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.50	4.14	7.38	6.07	2.69	.00	.00	.00	21.78
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.76	4.14	7.38	6.07	2.69	.00	.00	.00	21.05
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.35	6.93	6.07	3.41	.00	.00	.00	19.76
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.37	4.81	7.83	10.71	.00	.00	.00	.00	23.72
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.37	3.14	9.18	8.39	5.08	.22	.00	.00	26.38
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.01	7.15	10.08	8.00	3.41	.00	.00	.00	32.65
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.74	2.47	1.99	2.20	1.26	.00	.00	.00	8.67
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.45	5.64	8.38	2.60	.00	.00	.00	17.07
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	00	00	.00	.45	4.04	6.55	2.55	.00	.00	00	13.58
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	1.66	5.99	8.62	.69	.00	.00	.00	.00	17.00
AV PAN FACTOR	.00	.00	.00	.41	.47	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.58	6.07	7.92	4.62	.02	.00	.00	20.21
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.80	.59	.00	.00	

SWEET CORN	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.74	7.91	7.72	.00	.00	.00	.00	17.37
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	1.63	5.70	3.99	.00	.00	.00	.00	.00	11.35
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.45	3.45	5.61	3.88	.13	.00	.00	13.52
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	2.00	6.09	8.73	7.00	2.51	.00	.00	.00	26.36
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	1.43	5.09	3.99	.00	.00	.00	.00	.00	10.55
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	2.20	7.07	7.89	.00	.00	.00	.00	.00	17.19
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.59	7.04	8.00	4.42	.06	.00	.00	21.10
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

RADISH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	2.64	.00	.00	.00	.00	.00	.00	.00	2.67
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	1.63	6.00	9.63	4.38	.00	.00	.00	.00	21.68
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	00	

SORGHUM — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.45	4.04	6.99	4.60	.06	.00	.00	16.14
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

SOYBEANS — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.70	7.11	7.61	4.51	.00	.00	.00	20.94
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	1.75	4.48	.00	.00	.00	.00	.00	.00	6.26
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.23	3.42	6.82	9.26	2.08	.00	.00	.00	.00	21.80
AV. PAN FACTOR	.00	.00	.00	.41	.75	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.03	1.33	4.44	9.42	8.00	4.66	.18	.00	.00	28.06
AV. PAN FACTOR	.00	.00	.00	.41	.41	.64	.90	.92	.89	.82	.00	.00	

SUNFLOWER — BEG 4/25 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	1.45	5.55	9.63	6.07	.10	.00	.00	.00	22.83
AV. PAN FACTOR	.00	.00	.00	.41	.43	.77	.92	.72	.32	.00	.00	.00	

TOMATO — BEG 6/ 1 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.56	5.10	7.36	4.51	.00	.00	.00	18.53
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT — BEG 4/ 2 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.06	4.43	6.82	7.36	.59	.00	.00	.00	.00	20.26
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.51	.00	.00	

SQUASH — BEG 6/21 — END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.45	3.45	5.61	3.41	.00	.00	.00	12.91
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

WENATCHEE 47.42 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	27.7	35.0	42.7	51.7	60.2	67.4	73.8	72.3	63.7	51.2	38.8	31.6	
TOTAL PRECIPITATION (IN)	1.37	.85	.60	.62	.55	.53	.15	.66	.35	.57	1.15	1.45	8.85
EFFECTIVE PRECIP (IN)	.00	.10	.37	.44	.45	.47	.14	.54	.26	.36	.14	.00	3.28

ALFALFA BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.82	6.71	7.98	5.59	3.91	.47	.00	.00	28.48
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.26	7.47	8.84	6.23	4.34	.54	.00	.00	31.68
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	4.04	7.09	8.41	5.91	4.12	.51	.00	.00	30.08
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.37	8.23	10.55	7.52	5.00	.47	.00	.00	35.14
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/11 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.73	4.35	7.47	9.69	6.88	4.56	.40	.00	.00	34.09
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 4/28 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	4.65	8.23	10.55	7.52	5.00	.47	.00	.00	36.46
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/18 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	4.35	7.47	9.69	6.88	4.56	.40	.00	.00	33.80
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 1 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	3.97	7.47	9.69	6.88	4.56	.40	.00	.00	32.97
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.26	5.96	8.41	5.91	3.91	.30	.00	.00	26.74
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/11		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.61	2.85	5.20	7.55	5.26	2.81	.27	.00	.00	24.55
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/28		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.03	3.15	5.96	8.41	5.91	3.91	.30	.00	.00	27.66
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/18		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.37	2.85	5.20	7.55	5.26	2.81	.27	.00	.00	24.32
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.57	5.20	7.55	5.26	2.81	.27	.00	.00	23.66
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/23		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.48	4.82	7.13	5.26	3.47	.30	.00	.00	21.46
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.82	5.96	7.98	9.13	.00	.00	.00	.00	24.89
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/ 7		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.82	4.07	9.26	7.20	5.00	.58	.00	.00	27.92
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/19		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.34	5.85	8.61	10.12	6.88	3.47	.16	.00	.00	35.42
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/19		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.34	1.95	3.31	2.42	2.04	1.50	.09	.00	.00	11.65
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/10		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.64	8.17	7.03	1.09	.00	.00	.00	17.93
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.78	.94	.49	.00	.00	.00	

GREEN BEANS	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.57	5.75	5.91	1.18	.00	.00	.00	14.41
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.55	.80	.78	.00	.00	.00	

CARROTS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	3.32	7.64	7.83	.00	.00	.00	.00	.00	19.24
AV. PAN FACTOR	.00	.00	.00	.39	.50	.86	.80	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.46	3.12	7.75	6.88	4.28	.30	.00	.00	22.79
AV. PAN FACTOR	.00	.00	.00	.00	.35	.38	.74	.92	.83	.56	.00	.00	

SWEET CORN	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.46	3.67	9.13	4.69	.00	.00	.00	.00	17.95
AV. PAN FACTOR	.00	.00	.00	.00	.35	.44	.87	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	3.25	7.27	2.17	.00	.00	.00	.00	.00	13.14
AV. PAN FACTOR	.00	.00	.00	.39	.49	.82	.71	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/10	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.57	4.62	5.42	3.90	.40	.00	.00	15.92
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.45	.74	.76	.67	.00	.00	

DRY ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	3.92	7.47	8.84	5.89	1.92	.00	.00	.00	28.49
AV. PAN FACTOR	.00	.00	.00	.39	.58	.84	.84	.80	.68	.00	.00	.00	

GREEN ONION	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	2.87	6.67	2.14	.00	.00	.00	.00	.00	12.12
AV. PAN FACTOR	.00	.00	.00	.39	.44	.75	.70	.00	.00	.00	.00	.00	

PEAS	BEG 4/19	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.45	4.31	8.61	5.99	.00	.00	.00	.00	.00	19.36
AV. PAN FACTOR	.00	.00	.00	.39	.64	.96	.93	.00	.00	.00	.00	.00	

POTATO	BEG 5/23	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.46	3.23	8.62	6.88	3.96	.03	.00	.00	23.19
AV. PAN FACTOR	.00	.00	.00	.00	.35	.39	.82	.92	.77	.61	.00	.00	

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
	BEG 4/19 END 10/10													
_Y NET IRRIG REQUIRE(IN)		.00	.00	.00	.51	4.48	.00	.00	.00	.00	.00	.00	.00	4.99
AV. PAN FACTOR		.00	.00	.00	.42	.66	.00	.00	.00	.00	.00	.00	.00	
ER	BEG 4/19 END 10/10													
_Y NET IRRIG REQUIRE(IN)		.00	.00	.00	.45	3.25	7.76	9.67	2.56	.00	.00	.00	.00	23.69
AV. PAN FACTOR		.00	.00	.00	.39	.49	.87	.92	.51	.00	.00	.00	.00	
;	BEG 6/10 END 10/10													
ILY NET IRRIG REQUIRE(IN)*		.00	.00	.00	.00	.00	1.57	5.75	6.50	4.33	.29	.00	.00	18.44
AV. PAN FACTOR		.00	.00	.00	.00	.00	.32	.55	.87	.84	.54	.00	.00	
NS	BEG 5/23 END 10/10													
HLY NET IRRIG REQUIRE(IN)*		.00	.00	.00	.00	.46	3.49	8.41	6.55	4.17	.22	.00	.00	23.31
AV. PAN FACTOR		.00	.00	.00	.00	.35	.42	.80	.88	.81	.47	.00	.00	
H	BEG 4/19 END 10/10													
HLY NET IRRIG REQUIRE(IN)		.00	.00	.00	.45	3.54	4.39	.00	.00	.00	.00	.00	.00	8.39
AV. PAN FACTOR		.00	.00	.00	.39	.53	.79	.00	.00	.00	.00	.00	.00	
; GRAIN	BEG 4/ 2 END 10/10													
THLY NET IRRIG REQUIRE(IN)		.00	.00	.00	1.22	5.08	8.23	9.34	1.88	.00	.00	.00	.00	25.75
AV. PAN FACTOR		.00	.00	.00	.39	.74	.92	.89	.43	.00	.00	.00	.00	
BEET	BEG 4/19 END 10/10													
THLY NET IRRIG REQUIRE(IN)*		.00	.00	.00	.45	2.61	6.09	9.66	6.88	4.56	.52	.00	.00	30.77
AV. PAN FACTOR		.00	.00	.00	.39	.41	.69	.92	.92	.88	.82	.00	.00	
OWER	BEG 4/19 END 10/10													
ITHLY NET IRRIG REQUIRE(IN)		.00	.00	.00	.45	2.91	7.36	9.69	4.02	.00	.00	.00	.00	24.43
AV. PAN FACTOR		.00	.00	.00	.39	.45	.83	.92	.63	.00	.00	.00	.00	
'O	BEG 5/23 END 10/10													
NTHLY NET IRRIG REQUIRE(IN)*		.00	.00	.00	.00	.46	2.90	6.76	6.55	4.15	.19	.00	.00	21.01
AV. PAN FACTOR		.00	.00	.00	.00	.35	.36	.65	.88	.80	.44	.00	.00	
ER WHEAT	BEG 4/ 2 END 10/10													
NTHLY NET IRRIG REQUIRE(IN)		.00	.00	.00	2.21	6.33	8.23	7.53	.57	.31	.70	.00	.00	25.88
AV. PAN FACTOR		.00	.00	.00	.60	.90	.92	.72	.28	.12	.48	.93	.00	
EH	BEG 6/10 END 10/10													
NTHLY NET IRRIG REQUIRE(IN)		.00	.00	.00	.00	.00	1.57	4.62	5.42	2.19	.00	.00	.00	13.81
AV. PAN FACTOR		.00	.00	.00	.00	.00	.32	.45	.74	.70	.00	.00	.00	

WILBUR 47.75 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
EAN TEMPERATURE (F)	25.0	31.8	37.8	46.0	54.2	61.1	67.8	66.4	58.8	47.6	35.3	28.5	
OTAL PRECIPITATION (IN)	1.44	1.02	.94	.87	1.18	.88	.45	.70	.70	.87	1.58	1.68	12.31
FFECTIVE PRECIP (IN)	.00	.08	.57	.61	.87	.71	.44	61	.52	.55	.06	.00	5.02

ALFALFA BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.81	5.63	8.16	6.53	4.05	.28	.00	.00	26.46
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.06	6.29	9.07	7.28	4.53	.34	.00	.00	29.58
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 5/15 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.94	5.96	8.62	6.90	4.29	.31	.00	.00	28.02
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.67	6.96	10.88	8.78	5.25	.28	.00	.00	33.82
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 4/16 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.29	3.28	6.29	9.98	8.03	4.77	.22	.00	.00	32.86
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/ 4 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.71	6.96	10.88	8.78	5.25	.28	.00	.00	34.86
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 4/25 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.09	3.28	6.29	9.98	8.03	4.77	.22	.00	.00	32.66
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/ 7 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.20	6.29	9.98	8.03	4.77	.22	.00	.00	31.50
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 5/14 END 10/10

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.00	4.96	8.62	6.90	4.05	.14	.00	.00	25.66
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.21	1.98	4.29	7.71	6.15	2.85	.11	.00	.00	23.30
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.62	4.96	8.62	6.90	4.05	.14	.00	.00	26.28
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.98	4.29	7.71	6.15	2.85	.11	.00	.00	23.15
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 5/ 7	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.24	4.29	7.71	6.15	2.85	.11	.00	.00	22.35
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 6/ 1	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.54	7.26	6.15	3.57	.14	.00	.00	20.65
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.68	4.96	8.16	10.66	.00	.00	.00	.00	24.46
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 5/15	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.68	3.29	9.52	8.40	5.25	.37	.00	.00	27.53
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	4.57	7.29	10.43	8.03	3.57	.02	.00	.00	33.98
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.07	1.20	2.62	2.28	2.40	1.40	.00	.00	.00	9.97
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/21	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.50	5.95	8.40	2.78	.00	.00	.00	17.64
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.56	.96	.67	.00	.00	.00	

GREEN BEANS	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.50	4.34	6.62	2.70	.00	.00	.00	14.16
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.77	.79	.00	.00	.00	

CARROTS	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.14	6.13	8.96	.71	.00	.00	.00	.00	18.07
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.83	.66	.00	.00	.00	.00	

FIELD CORN	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.77	6.39	7.95	4.79	.16	.00	.00	21.06
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.60	.91	.88	.59	.00	.00	

SWEET CORN	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.93	8.24	7.81	.00	.00	.00	.00	17.99
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.77	.91	.00	.00	.00	.00	

CRUCIFER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.11	5.84	4.17	.00	.00	.00	.00	.00	12.23
AV. PAN FACTOR	.00	.00	.00	.41	.46	.79	.80	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.50	3.75	5.71	4.05	.28	.00	.00	14.28
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.76	.75	.00	.00	

DRY ONION	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.49	6.23	9.07	7.06	2.68	.00	.00	.00	27.65
AV. PAN FACTOR	.00	.00	.00	.41	.52	.83	.84	.82	.70	.00	.00	.00	

GREEN ONION	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	1.91	5.23	4.17	.00	.00	.00	.00	.00	11.42
AV. PAN FACTOR	.00	.00	.00	.41	.43	.71	.80	.00	.00	.00	.00	.00	

PEAS	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.69	7.22	8.18	.00	.00	.00	.00	.00	18.21
AV. PAN FACTOR	.00	.00	.00	.41	.55	.95	.94	.00	.00	.00	.00	.00	

POTATO	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.78	7.36	8.03	4.58	.20	.00	.00	21.96
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.69	.92	.85	.65	.00	.00	

RADISH	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	3.15	.00	.00	.00	.00	.00	.00	.00	3.27
AV. PAN FACTOR	.00	.00	.00	.41	.62	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.12	6.15	9.98	4.55	.00	.00	.00	.00	22.90
AV. PAN FACTOR	.00	.00	.00	.41	.46	.82	.92	.59	.00	.00	.00	.00	

SORGHUM	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.50	4.34	7.05	4.77	.21	.00	.00	16.87
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.42	.82	.88	.66	.00	.00	

SOYBEANS	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.90	7.44	7.65	4.68	.12	.00	.00	21.78
AV. PAN FACTOR	.00	.00	.00	.00	.00	.35	.70	.88	.87	.53	.00	.00	

SPINACH	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	2.23	4.65	.00	.00	.00	.00	.00	.00	6.99
AV. PAN FACTOR	.00	.00	.00	.41	.48	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 4/ 2		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	3.96	6.96	9.60	2.23	.00	.00	.00	.00	23.54
AV. PAN FACTOR	.00	.00	.00	.41	.75	.92	.89	.43	.00	.00	.00	.00	

SUGAR BEET	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.12	1.80	4.59	9.77	8.03	4.83	.33	.00	.00	29.46
AV. PAN FACTOR	.00	.00	.00	.41	.41	.64	.90	.92	.89	.82	.00	.00	

SUNFLOWER	BEG 4/25		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	1.92	5.69	9.98	6.15	.12	.00	.00	.00	23.98
AV. PAN FACTOR	.00	.00	.00	.41	.43	.77	.92	.72	.32	.00	.00	.00	

TOMATO	BEG 6/ 1		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	1.76	5.42	7.40	4.68	.10	.00	.00	19.35
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.52	.85	.86	.51	.00	.00	

WINTER WHEAT	BEG 4/ 2		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.63	5.00	6.96	7.69	.68	.02	.28	.00	.00	22.26
AV. PAN FACTOR	.00	.00	.00	.63	.91	.92	.72	.28	.12	.50	1.40	.00	

SQUASH	BEG 6/21		END 10/10										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.50	3.75	5.71	3.63	.00	.00	.00	13.59
AV. PAN FACTOR	.00	.00	.00	.00	.00	.33	.37	.67	.72	.00	.00	.00	

WILSON CREEK 47.42 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	26.9	34.7	41.0	49.0	57.6	65.2	71.2	69.3	61.3	49.3	36.7	29.9	
TOTAL PRECIPITATION (IN)	1.11	.78	.70	.60	.78	.59	.27	.38	.43	.61	1.15	1.36	8.76
EFFECTIVE PRECIP (IN)	.00	.13	.45	.44	.64	.55	.26	.37	.35	.40	.19	.00	3.77

ALFALFA	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.45	7.41	9.76	7.97	5.17	1.69	.00	.00	37 46
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	6.10	8.25	10.82	8.85	5.75	1.93	.00	.00	41.70
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF	BEG 4/30		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	5.77	7.83	10.29	8.41	5.46	1.81	.00	.00	39.58
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER	BEG 4/26		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.14	5.10	9.09	12.93	10.61	6.62	1.69	.00	.00	46.17
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER	BEG 3/29		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.53	4.76	8.25	11.87	9.73	6.04	1.45	.00	.00	43.64
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER	BEG 4/15		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.64	5.10	9.09	12.93	10.61	6.62	1.69	.00	.00	46.67
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER	BEG 4/ 6		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.05	4.76	8.25	11.87	9.73	6.04	1.45	.00	.00	43.15
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER	BEG 4/18		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.50	4.76	8.25	11.87	9.73	6.04	1.45	.00	.00	42.60
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER	BEG 4/26		END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.11	3.41	6.58	10.29	8.41	5.17	1.09	.00	.00	35.05
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

APRICOT W/O COVER	BEG 3/29	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.01	1.31	3.07	5.74	9.23	7.53	3.72	.96	.00	.00	31.58
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

CHERRY W/O COVER	BEG 4/15	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.54	3.41	6.58	10.29	8.41	5.17	1.09	.00	.00	35.48
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

PEACH W/O COVER	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.88	3.07	5.74	9.23	7.53	3.72	.96	.00	.00	31.14
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

PEAR & PLUM W/O COVER	BEG 4/18	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	3.07	5.74	9.23	7.53	3.72	.96	.00	.00	30.68
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

GRAPES	BEG 5/19	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.80	5.32	8.71	7.53	4.59	1.09	.00	.00	28.03
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

HOPS	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.51	6.58	9.76	12.80	.00	.00	.00	.00	31.65
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

MINT	BEG 4/30	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	2.51	4.48	11.34	10.17	6.62	2.05	.00	.00	37.18
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

RASPBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.88	6.45	9.51	12.40	9.73	4.59	.60	.00	.00	44.15
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

STRAWBERRY	BEG 4/ 6	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.88	2.06	3.64	2.90	3.14	1.97	.36	.00	.00	14.96
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

DRY BEANS	BEG 6/ 4	END 10/31											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.66	11.15	9.25	.63	.00	.00	.00	23.69
AV. PAN FACTOR	.00	.00	.00	.00	.00	.36	.87	.88	.38	.00	.00	.00	

GREEN BEANS	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.27	8.11	8.38	.51	.00	.00	.00	19.27
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.63	.80	.77	.00	.00	.00	

CARROTS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	5.12	8.64	4.87	.00	.00	.00	.00	.00	19.77
AV. PAN FACTOR	.00	.00	.00	.38	.68	.88	.74	.00	.00	.00	.00	.00	

FIELD CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	3.60	10.07	9.73	5.39	.23	.00	.00	29.74
AV. PAN FACTOR	.00	.00	.00	.00	.33	.40	.78	.92	.79	.53	.00	.00	

SWEET CORN	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	4.45	11.53	5.50	.00	.00	.00	.00	22.20
AV. PAN FACTOR	.00	.00	.00	.00	.33	.48	.89	.90	.00	.00	.00	.00	

CRUCIFER	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.13	4.92	6.91	.00	.00	.00	.00	.00	.00	12.96
AV. PAN FACTOR	.00	.00	.00	.38	.66	.82	.00	.00	.00	.00	.00	.00	

CUCUMBER	BEG 6/ 4	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.20	6.44	7.94	5.12	.57	.00	.00	22.28
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.75	.65	.00	.00	

DRY ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.23	5.72	8.25	10.79	7.62	.57	.00	.00	.00	34.18
AV. PAN FACTOR	.00	.00	.00	.40	.75	.84	.84	.73	.65	.00	.00	.00	

GREEN ONION	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.12	4.16	6.75	.00	.00	.00	.00	.00	.00	12.03
AV. PAN FACTOR	.00	.00	.00	.38	.57	.80	.00	.00	.00	.00	.00	.00	

PEAS	BEG 4/ 6	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.26	6.54	9.43	2.24	.00	.00	.00	.00	.00	19.47
AV. PAN FACTOR	.00	.00	.00	.41	.85	.95	.90	.00	.00	.00	.00	.00	

POTATO	BEG 5/19	END 10/31										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	3.82	11.06	9.71	4.48	.00	.00	.00	29.78
AV. PAN FACTOR	.00	.00	.00	.00	.33	.42	.86	.92	.74	.00	.00	.00	

RADISH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.84	5.03	.00	.00	.00	.00	.00	.00	.00	6.86
AV. PAN FACTOR	.00	.00	.00	.55	.67	.00	.00	.00	.00	.00	.00	.00	

SAFFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.13	4.96	9.09	10.42	.98	.00	.00	.00	.00	26.58
AV. PAN FACTOR	.00	.00	.00	.38	.66	.92	.81	.31	.00	.00	.00	.00	

SORGHUM — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.27	8.22	9.29	5.53	.42	.00	.00	25.73
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.64	.88	.81	.54	.00	.00	

SOYBEANS — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	4.15	10.69	9.29	5.23	.16	.00	.00	30.23
AV. PAN FACTOR	.00	.00	.00	.00	.33	.45	.83	.88	.77	.43	.00	.00	

SPINACH — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.14	5.28	1.49	.00	.00	.00	.00	.00	.00	7.90
AV. PAN FACTOR	.00	.00	.00	.38	.70	.77	.00	.00	.00	.00	.00	.00	

SPRING GRAIN — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.34	3.01	7.11	9.09	7.01	.00	.00	.00	.00	.00	26.57
AV. PAN FACTOR	.00	.00	.47	.63	.92	.92	.55	.00	.00	.00	.00	.00	

SUGAR BEET — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.12	3.49	8.16	11.87	9.67	5.79	.24	.00	.00	40.34
AV. PAN FACTOR	.00	.00	.00	.38	.49	.83	.92	.91	.85	.81	.00	.00	

SUNFLOWER — BEG 4/ 6 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.12	4.32	8.99	11.33	2.32	.00	.00	.00	.00	28.08
AV. PAN FACTOR	.00	.00	.00	.38	.59	.91	.88	.47	.00	.00	.00	.00	

TOMATO — BEG 5/19 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.72	3.23	8.90	9.29	5.31	.27	.00	.00	27.72
AV. PAN FACTOR	.00	.00	.00	.00	.33	.36	.69	.88	.78	.43	.00	.00	

WINTER WHEAT — BEG 3/12 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.65	4.34	7.12	8.35	3.28	.94	.44	.78	.00	.00	25.90
AV. PAN FACTOR	.00	.00	.67	.87	.92	.85	.39	.12	.12	.46	.85	.00	

SQUASH — BEG 6/ 4 — END 10/31

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.20	6.44	7.92	1.87	.00	.00	.00	18.44
AV. PAN FACTOR	.00	.00	.00	.00	.00	.31	.51	.76	.65	.00	.00	.00	

WINTHROP 48.47 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	18.4	26.9	35.0	45.8	54.6	61.3	67.4	66.2	57.9	46.2	32.0	22.0	
TOTAL PRECIPITATION (IN)	2.35	1.40	.89	.76	.83	.83	.58	.83	.64	.82	1.78	2.90	14.61
EFFECTIVE PRECIP (IN)	.00	.00	.17	.48	.59	.61	.50	.63	.46	.49	.00	.00	3.93

ALFALFA BEG 6/ 3 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.26	6.17	4.58	3.48	.07	.00	.00	17.56
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

CLOVER BEG 6/ 3 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.68	6.87	5.12	3.90	.09	.00	.00	19.67
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF BEG 6/ 3 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.47	6.52	4.85	3.69	.08	.00	.00	18.61
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER BEG 6/ 1 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	4.41	8.28	6.22	4.52	.07	.00	.00	23.50
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER BEG 5/ 4 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.95	4.47	7.57	5.67	4.10	.04	.00	.00	23.80
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER BEG 5/22 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.65	4.95	8.28	6.22	4.52	.07	.00	.00	24.68
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER BEG 5/12 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.35	4.47	7.57	5.67	4.10	.04	.00	.00	23.21
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER BEG 5/24 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.45	4.47	7.57	5.67	4.10	.04	.00	.00	22.31
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

APPLES W/O COVER BEG 6/ 1 END 10/ 7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.06	6.52	4.85	3.48	.00	.00	.00	17.92
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

WINTHROP

W/O COVER	BEG 5/ 4	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.12	3.02	5.82	4.30	2.45	.00	.00	.00	16.70
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

I/O COVER	BEG 5/22	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.40	3.50	6.52	4.85	3.48	.00	.00	.00	18.75
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

O COVER	BEG 5/12	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.78	3.02	5.82	4.30	2.45	.00	.00	.00	16.36
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

LUM W/O COVER	BEG 5/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.26	3.02	5.82	4.30	2.45	.00	.00	.00	15.84
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.43	5.47	4.30	3.07	.00	.00	.00	13.26
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	

	BEG 6/ 3	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.84	6.17	7.59	.00	.00	.00	.00	16.61
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	

	BEG 6/ 3	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	1.79	7.22	5.95	4.52	.11	.00	.00	19.59
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	

Y	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.60	5.19	7.93	5.67	3.07	.00	.00	.00	23.46
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	

RY	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.36	1.81	1.61	1.56	1.20	.00	.00	.00	6.54
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	

S	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
Y NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.97	3.93	4.52	.03	.00	.00	9.44
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.67	.96	.65	.00	.00	

GREEN BEANS	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.97	2.62	3.64	.08	.00	.00	7.31
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.48	.79	.80	.00	.00	

CARROTS	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.54	2.79	7.17	3.50	.00	.00	.00	.00	13.99
AV. PAN FACTOR	.00	.00	.00	.00	.39	.56	.87	.78	.00	.00	.00	.00	

FIELD CORN	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.23	2.95	4.38	4.31	.11	.00	.00	11.98
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.39	.73	.92	.89	.00	.00	

SWEET CORN	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	.23	3.38	5.27	3.09	.00	.00	.00	11.98
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.44	.86	.90	.00	.00	.00	

CRUCIFER	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.54	2.71	6.70	.55	.00	.00	.00	.00	10.49
AV. PAN FACTOR	.00	.00	.00	.00	.39	.55	.82	.74	.00	.00	.00	.00	

CUCUMBER	BEG 7/17	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.97	2.12	3.21	.06	.00	.00	6.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.40	.71	.75	.00	.00	

DRY ONION	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.54	3.34	6.87	5.12	3.53	.03	.00	.00	19.44
AV. PAN FACTOR	.00	.00	.00	.00	.39	.65	.84	.84	.77	.66	.00	.00	

GREEN ONION	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.54	2.32	6.33	.54	.00	.00	.00	.00	9.72
AV. PAN FACTOR	.00	.00	.00	.00	.39	.48	.78	.73	.00	.00	.00	.00	

PEAS	BEG 5/15	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.54	3.77	7.93	2.47	.00	.00	.00	.00	14.69
AV. PAN FACTOR	.00	.00	.00	.00	.39	.72	.96	.92	.00	.00	.00	.00	

POTATO	BEG 6/24	END 10/ 7											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.23	3.03	4.94	4.31	.09	.00	.00	12.59
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.40	.81	.92	.83	.00	.00	

WINTHROP

RADISH	BEG 5/15	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.76	3.44	.00	.00	.00	.00	.00	.00	4.20
AV. PAN FACTOR	.00	.00	.00	.00	.49	.67	.00	.00	.00	.00	.00	.00	

SAFFLOWER	BEG 5/15	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.54	2.72	7.36	5.51	.96	.00	.00	.00	17.09
AV. PAN FACTOR	.00	.00	.00	.00	.39	.55	.90	.90	.43	.00	.00	.00	

SORGHUM	BEG 7/17	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.97	2.63	3.94	.10	.00	.00	7.63
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.48	.85	.85	.00	.00	

SOYBEANS	BEG 6/24	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.23	3.24	4.81	4.10	.09	.00	.00	12.49
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.43	.79	.88	.84	.00	.00	

SPINACH	BEG 5/15	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.54	3.00	3.06	.00	.00	.00	.00	.00	6.59
AV. PAN FACTOR	.00	.00	.00	.00	.39	.60	.79	.00	.00	.00	.00	.00	

SPRING GRAIN	BEG 4/22	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.10	2.02	4.70	7.57	4.55	.28	.00	.00	.00	19.23
AV. PAN FACTOR	.00	.00	.00	.48	.53	.88	.92	.76	.29	.00	.00	.00	

SUGAR BEET	BEG 5/15	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.54	2.04	6.09	5.67	4.31	.10	.00	.00	18.73
AV. PAN FACTOR	.00	.00	.00	.00	.39	.44	.75	.92	.92	.85	.00	.00	

SUNFLOWER	BEG 5/15	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.54	2.38	7.10	5.66	1.79	.00	.00	.00	17.46
AV. PAN FACTOR	.00	.00	.00	.00	.39	.49	.87	.92	.57	.00	.00	.00	

TOMATO	BEG 6/24	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.23	2.78	3.77	4.09	.09	.00	.00	10.96
AV. PAN FACTOR	.00	.00	.00	.00	.00	.37	.37	.64	.88	.84	.00	.00	

WINTER WHEAT	BEG 4/22	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.19	3.38	4.95	7.53	2.57	.00	.02	.00	.00	18.64
AV. PAN FACTOR	.00	.00	.00	.64	.81	.92	.91	.50	.12	.57	.00	.00	

SQUASH	BEG 7/17	END 10/ 7										
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)*	.00	.00	.00	.00	.00	.00	.97	2.12	3.21	.06	.00	.00	6.36
AV. PAN FACTOR	.00	.00	.00	.00	.00	.00	.33	.40	.71	.75	.00	.00	

YAKIMA 46.57 LATITUDE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MEAN TEMPERATURE (F)	28.2	36.1	41.9	49.2	57.3	64.5	70.4	68.6	60.9	49.9	38.2	31.5	
TOTAL PRECIPITATION (IN)	1.44	.74	.65	.50	.48	.60	.14	.36	33	.47	.97	1.30	7 90
EFFECTIVE PRECIP (IN)	.00	.18	.42	.36	.40	.53	.14	.33	.26	.30	.12	.00	3.04

ALFALFA — BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.70	5.62	6.80	8.94	7.14	4.55	1.56	.00	.00	35.31
AV. PAN FACTOR	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	.76	

GRASS/COVER — BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	6.25	7.57	9.90	7.92	5.05	1.77	.00	.00	39.25
AV. PAN FACTOR	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	.84	

PASTURE/TURF — BEG 4/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.74	5.93	7.18	9.42	7.53	4.80	1.67	.00	.00	37.28
AV. PAN FACTOR	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	

APPLES W/COVER — BEG 4/20 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.42	4.98	8.34	11.81	9.50	5.81	1.56	.00	.00	42.42
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

APRICOTS W/COVER — BEG 3/23 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.08	1.54	4.67	7.57	10.85	8.71	5.31	1.36	.00	.00	40.08
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

CHERRY W/COVER — BEG 4/ 9 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.93	4.98	8.34	11.81	9.50	5.81	1.56	.00	.00	42.94
AV. PAN FACTOR	.36	.36	.36	.36	.68	.92	1.00	1.00	.96	.76	.36	.36	

PEACH W/COVER — BEG 3/31 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.35	4.67	7.57	10.85	8.71	5.31	1.36	.00	.00	39.81
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PEAR & PLUM W/COVER — BEG 4/12 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	4.67	7.57	10.85	8.71	5.31	1.36	.00	.00	39.25
AV. PAN FACTOR	.36	.36	.36	.36	.64	.84	.92	.92	.88	.68	.36	.36	

PRUNES W/O COVER — BEG 4/20 END 10/27

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.36	3.40	6.03	9.42	7.53	4.55	1.04	.00	.00	32.32
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	

T W/O COVER	BEG 3/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.06	1.33	3.08	5.25	8.46	6.74	3.28	.94	.00	.00	29.15
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	
W/O COVER	BEG 4/ 9	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.79	3.40	6.03	9.42	7.53	4.55	1.04	.00	.00	32.76
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	
W/O COVER	BEG 3/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.15	3.08	5.25	8.46	6.74	3.28	.94	.00	.00	28.92
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	
& PLUM W/O COVER	BEG 4/12	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.67	3.08	5.25	8.46	6.74	3.28	.94	.00	.00	28.44
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	
S	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.45	4.87	7.99	6.74	4.04	1.04	.00	.00	26.14
AV. PAN FACTOR	.36	.36	.36	.36	.36	.56	.68	.72	.68	.56	.36	.36	
	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.32	2.76	6.03	8.94	11.46	.00	.00	.00	.00	29.52
AV. PAN FACTOR	.40	.40	.40	.40	.40	.68	.76	1.20	.00	.00	.00	.00	
	BEG 4/23	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.32	2.76	4.10	10.38	9.10	5.81	1.87	.00	.00	34.35
AV. PAN FACTOR	.40	.40	.40	.40	.40	.48	.88	.96	.96	.88	.40	.40	
ERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.33	6.25	8.73	11.33	8.71	4.04	.63	.00	.00	41.02
AV. PAN FACTOR	.32	.32	.32	.32	.84	.96	.96	.92	.68	.40	.32	.32	
BERRY	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	1.33	2.13	3.33	2.73	2.81	1.77	.42	.00	.00	14.52
AV. PAN FACTOR	.32	.32	.32	.32	.32	.40	.24	.32	.32	.32	.32	.32	
EANS	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
THLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	3.18	10.73	7.64	.22	.00	.00	.00	21.78
AV. PAN FACTOR	.00	.00	.00	.00	.00	.40	.91	.81	.31	.00	.00	.00	

[illegible]

RADISH	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.86	.77	.00	.00	.00	.00	.00	.00	.00	3.62
AV. PAN FACTOR	.00	.00	.47	.61	.66	.00	.00	.00	.00	.00	.00	.00	
SAFFLOWER	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.23	5.85	8.34	8.02	.16	.00	.00	.00	.00	24.60
AV. PAN FACTOR	.00	.00	.47	.49	.79	.92	.68	.21	.00	.00	.00	.00	
SORGHUM	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.58	8.28	8.32	4.62	.30	.00	.00	24.10
AV. PAN FACTOR	.00	.00	.00	.00	.00	.34	.70	.88	.77	.51	.00	.00	
SOYBEANS	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.36	4.83	10.27	8.32	3.69	.00	.00	.00	28.46
AV. PAN FACTOR	.00	.00	.00	.00	.34	.56	.87	.88	.66	.00	.00	.00	
SPINACH	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.26	5.35	.00	.00	.00	.00	.00	.00	.00	7.61
AV. PAN FACTOR	.00	.00	.47	.50	.76	.00	.00	.00	.00	.00	.00	.00	
SPRING GRAIN	BEG 3/ 4	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.56	3.58	6.88	8.14	3.90	.00	.00	.00	.00	.00	23.06
AV. PAN FACTOR	.00	.00	.47	.75	.92	.90	.45	.00	.00	.00	.00	.00	
SUGAR BEET	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.11	4.54	8.03	10.85	8.57	4.46	.00	.00	.00	38.56
AV. PAN FACTOR	.00	.00	.47	.47	.62	.89	.92	.91	.84	.00	.00	.00	
SUMMER	BEG 3/30	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	2.14	5.40	8.34	9.43	.88	.00	.00	.00	.00	26.19
AV. PAN FACTOR	.00	.00	.47	.47	.73	.92	.80	.38	.00	.00	.00	.00	
SWEET CORN	BEG 5/11	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.36	3.53	9.23	8.32	3.98	.08	.00	.00	26.48
AV. PAN FACTOR	.00	.00	.00	.00	.34	.42	.78	.88	.67	.36	.00	.00	
WINTER WHEAT	BEG 3/ 4	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	1.11	4.43	6.88	6.65	1.45	.82	.43	.90	.00	.00	22.67
AV. PAN FACTOR	.00	.00	.70	.91	.92	.74	.30	.12	.12	.46	.80	.00	
YAM	BEG 5/31	END 10/27											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	.00	2.41	6.60	7.02	1.19	.00	.00	.00	17.21
AV. PAN FACTOR	.00	.00	.00	.00	.00	.32	.56	.75	.68	.00	.00	.00	